THE CANADIAN Horticulturist.

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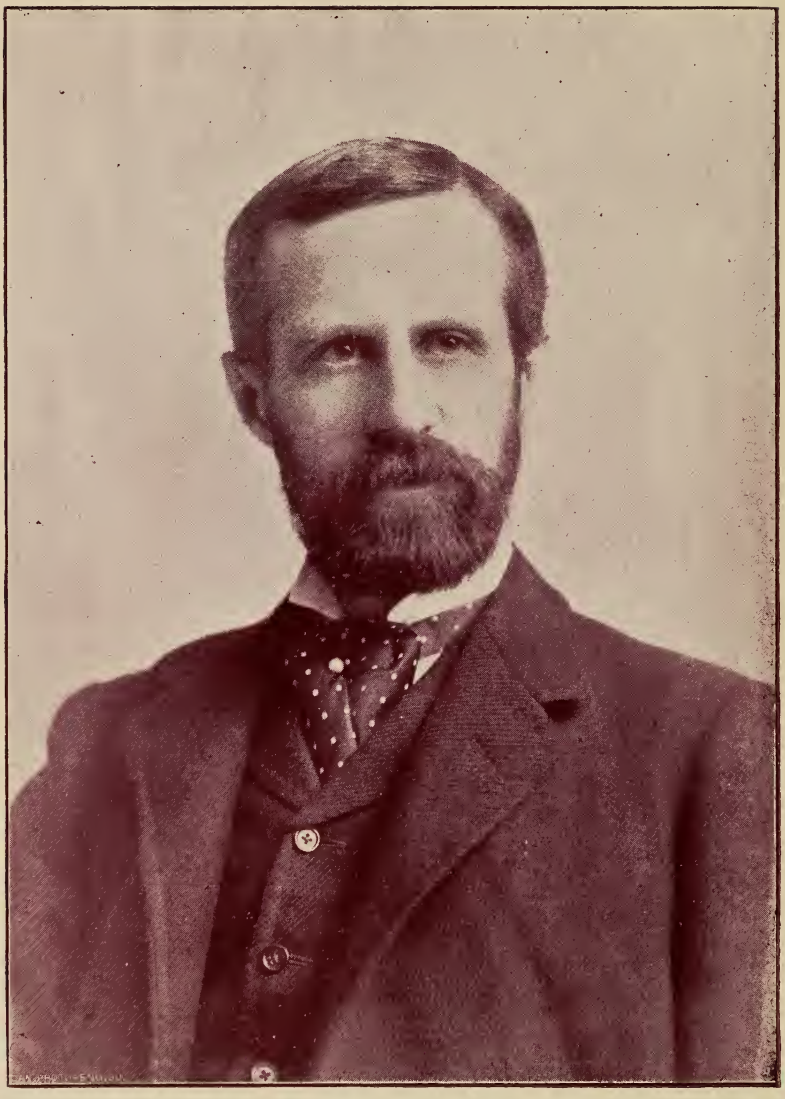

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BURBANK.

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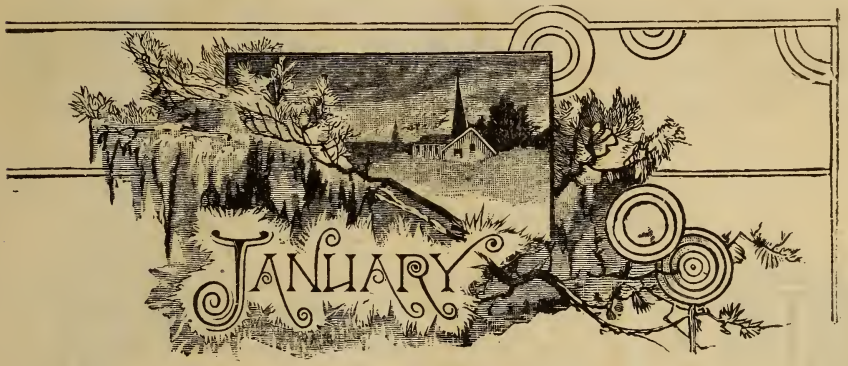
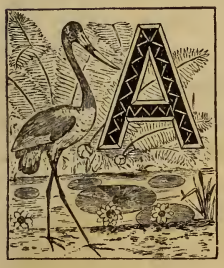


THE BURBANK PLUM.



A GOOD paper on "Native Plums" was read by Professor Craig, of Ottawa, at the annual meeting of our Association, held in the City of Brantford in 1892. In this paper, Mr. Craig pointed out the value for northern seetions, of such varieties of P. Americana as Cheney, De Soto, Rolling-stone, Weaver, Wolf, Hawkeye and others; at the same time he stated that the Chickasa plums (P. Chickasa) such as Newman and Pottawattamie, also the Wild Goose (P. hortulana), were not yet proved to be sufficiently hardy for cultivation outside the peach-growing district.

In the August number of this journal for 1892, some reference was made to Japan plums, and one variety was described as worthy of trial in Southern Ontario, viz., the Abundance. We now introduce to the notice of our readers another of equal promise, viz., the Burbank, of which a colored plate appears in this number. At the same time, we desire to caution our readers that this class of plums is tender, and we have no reason to assums that they will succeed outside the peach belt of Ontario. The Burbank, however, has been grown with considerable success in Western New York by Mr. S. D. Willard, of Geneva, who claims that it is a profitable variety to grow for market in that section.

The tree is a good bearer, and is being planted freely in commercial orchards in some sections. It is named after Mr. Luther Burbank, of Santa Rosa, California, who imported a lot of seedling plums from Japan in the year 1885, and, after fruiting them, selected this variety as the most desirable of all.

The fruit is described as of medium size; form, roundish, conical, tapering toward the apex; cavity, regular, deep, abrupt, with leather-crack marks; suture, scarcely perceptible; stem, stout, half-inch long; apex, a mere point; surface, smooth, with very little bloom; cracks and dots of brown sometimes apparent; color, dark red or purplish, running into bright amber, with the yellow under-color showing through the patches; dots, numerous, minute, brown; skin, medium thickness, tender, peeling easily from fully ripened specimens; flesh, amber yellow, melting, juicy; stone, small to medium, and clings to the flesh; flavor, rich, sugary, resembling other Japanese plums; quality, best.

RASPBERRIES, NEW AND OLD.

IT is an easy matter to secure enough raspberries for home use from a few plants, but he who grows for the market should give attention to the varieties planted and the berries produced. In color, these may be yellow, red, purple, and black. For yellow, the Caroline and Brinckle Orange are very profitable; for red, the Marlboro' Cuthbert, and Rancocas; for purple, Schaffer's Colossal, and for black the Souhegan, Mammoth Cluster, and Ohio. These are all well-tested varieties, which can be recommended for productiveness, covering a period from June 20th to August 1st with profitable pickings. New varieties appear each year and demand some attention from berry growers. Among these the following have been tested at the Pennsylvania Experiment Station:

Columbian.—The plants and berries of this variety resemble Shaffer's Colossal. These two are of a type very different from the other raspberries. Co'umbian is a seedling of the Cuthbert, grown near the Gregg, and, therefore, believed to be a cross between the black and red raspberries. It is a prolific bearer and a most vigorous grower; the canes this second year from planting are erect, and from six to eight feet high, the berries are very large, purple, and in total yield there was nearly twice the weight of berries from the best red or black variety.

Smith's Prolific.—Stout canes are produced by this plant, and its fruit is borne in large clusters. The berries are very fine, being of medium size, made up of small drupes which are very black and sweet, possessing a good flavor. When the plants have made a good stand, they should produce a large yield of fruit.

Thompson's Early Prolific.—The principal merit claimed for this variety is its earliness, which was not marked in this its first fruiting season. Pickings were made continuously until August 1st. The berries are very large, light red in color, with the prevailing flavor of the red berries.

THE MEETING AT PETERBORO'.

CONSIDERABLE amount of very valuable matter for our report was elicited at the meeting in Peterboro'. True, the local attendance was comparatively small, but those who were present showed a deep interest in our work. The name of Mr E. B. Edwards, President of the Peterboro' Association, deserves especial mention, as one who took the deepest interest in our work, and rendered every assistance in his power to make our meeting a success.

The Kieffer Pear.—This variety was spoken of by Mr. Pettit, as succeeding better in the West than in Ontario, but some samples shown by Ontario at the World's Fair were remarkably fine. Mr. Boulter, of Picton, said that the common notion that it was excellent for canning was not borne out in his experience, for it has one fault; it won't stand up through the boiling. Mr. A. M. Smith said he had sold his crop to the canning factory at Grimsby who wanted all they could get. Quite a difference of opinion was also expressed regarding its quality, and all this goes to show how valuable to us all will be properly conducted experimental work.

Spraying for Insects and Fungi is another important line of experimental work, and many questions are yet unsettled. Prof. Hutt, the newly appointed Horticulturist at Guelph Agricultural College, said he had been visiting the fruit farms of Messrs. Maxwell Bros., at Geneva, N. Y., and though they have large plum orchards they do not spray, but capture and cremate the curculio in the old-fashioned way. The curculio and stung fruit are gathered in a sheet ten or twelve feet in diameter, made like an inverted umbrella, and supported on a light two wheeled barrow. A slit in the sheet, opposite the handles allows the tree to enter to the centre. The limbs are jarred with a padded bumper, and everything on the sheet rolls into a tin drawer at the bottom."

Mr. Geo. Cline, of Winona, Ontario, said he had been spraying his plum orchard with Paris green for about twelve years past, and has thereby succeeded in procuring a fair crop almost every year. In parts where he omitted spraying, the crop had failed.

Mr. W. M. Orr, of Stoney Creek, reported having sprayed his Flemish Beauty pear trees with Bordeaux mixture for the scab, and had failed to rid them of the evil, and felt discouraged.

Prof. Craig called attention to samples of the same apple grown without

being sprayed and with it, and the marked difference between them ; and the Secretary instanced the fine Green Newton Pippins shown at Chicago by the State of New York, which had been cleared of scab by the use of the Bordeaux mixture.

In view of the various results obtained by various experiments the importance of more careful and extended experimental work was plainly indicated.

At a subsequent meeting of the Board it was decided to continue urging upon the Minister of Agriculture for Ontario, the advisability of instituting experimental stations in the interest of fruit growers.

Kerosene Emulsions.—Prof. Fletcher gave some good hints for exterminating injurious insects, such as lice on plum trees. He said that the formula recommended by Prof. Cook, reduced the amount of kerosene too much. Prof. Riley's formula was best, which required two gallons of kerosene, one gallon soap, and one of water. The kerosene was added when the soap mixture was hot, and afterwards the whole was diluted with twelve gallons of water.

Three best Winter Apples.—For early winter the Blenheim Orange was counted most appropriate. About Peterboro' this apple is grown quite successfully; Mr. E. B. Edwards stated that in his shipment of apples last season to Great Britain, this apple netted him just double the returns of any other variety.

For mid-winter, some recommend the Baldwin, some the King, and some the Northern Spy. No doubt the first is one of our best shipping apples, because it carries so well and shows bruises so little. In this particular the Spy fails as an export apple to the English market, for it shows bruises badly; however, for a near market it is one of our very best. Not only is it highly prized in our own markets, but in the United States also, our Canadian Spys are in great demand. At the present time they will bring $4.50 a barrel in Chicago, and many car loads of them could be disposed of most readily.

The King apple stands at the very top in the British markets, alongside of the celebrated Green Newton Pippin, but unfortunately the latter scabs, and the former is a wretchedly scant bearer.

The Ben Davis is the favorite of some growers for a mid-winter apple, it is hardy, bears early and abundantly, and is of a good color; only for its unfortunate lack of quality, it would be *the* apple we are seeking. But evidently the great mid-winter variety, perfect in every particular, has not yet been found.

For a late winter, the Golden Russet of Western New York was highly commended.

A Good Rose.—The Lena Turner was mentioned by Mr. Thos. Beall, as an excellent rose. It had been a constant bloomer with him, was dark pink in color, and one of the most satisfactory in his collection. He grows a good many of hybrid perpetuals, and lays them down every fall, partly covering them with earth, for winter protection.

Uniformity in Description of Fruits.—Mr. Saunders gave a very valuable address on "Desirable Hardy Ornamental Trees and Shrubs for Ontario," which will appear in full in our Annual Report. He also spoke upon the great importance of uniformity in the descriptions of fruits, given in the HORTICULTURIST and other journals.

In describing apples and pears, the following order was desirable, viz.:

Tree, origin, character of growth, color of wood, or other peculiarities, productiveness, etc.

Fruit, size, form, color, character of stem and cavity, and of calyx and basin; *skin*, color and markings.

Flesh, color, texture, juciness, sweetness or acidity, flavor, quality.

Period of ripening.

In describing plums and peaches, a similar order should be followed, only that the character of the suture should follow the color, and in speaking of the quality of the flesh, it should be stated whether it is free from or clings to the stone.

Raspberries in the North.—Mr. R. B. Whyte, of Ottawa, grows his raspberries on a heavy retentive soil. He plants in the fall, placing the plants from two to three feet apart in the rows, and the rows from five to seven feet apart, according to the variety. His method of pruning, as described, is the very opposite of that used in the Niagara district. He allows his canes to grow up tall during the summer, cutting off all laterals within two or three buds of the main cane. Then in the fall cut back the tall stems to about five feet, and bend them down to the ground, placing upon them pieces of boards, scantlings or other weights, to keep them under the snow. He always cuts out the old wood and surplus canes as soon as the fruit is gathered. Four to six canes is the number allowed each hill.

The eight best varieties, in Mr. Whyte's estimation, are (Red) Cuthbert, Herstine and Heebner; (Yellow) Golden Queen, Brinckle's Orange and Caroline; the Hillborn blackcap, and the purple hybrid Shaffer.

Mr. Boulter, the President of the Peterboro' Association, said that the Shaffer was not so desirable for canning purposes as commonly supposed. For home canning it is all right, but in the canning factories it goes to pieces in cooking, and takes too much sugar to be desirable.

The Peach Curl was curable with Bordeaux mixture, according to Prof. Craig. The first application should be made before the foliage starts, and the succeeding ones at intervals of ten days.

The Formation of Local Horticultural Societies in the towns and incorporated villages of Ontario, was discussed, whose object should be the distribution of horticultural literature and the holding of lectures, instead of giving prizes for fruit exhibits. (See Agricultural and Arts Act, sections 36, 37 and 47.) The societies would receive their due share of the electoral district grant,

and for eighty cents each, could make every member also a member of the Ontario Fruit Growers' Association, with all its privileges. The remaining $1.20 could be well spent in the interest of members, in an additional distribution of fruit and ornamental plants or bulbs, payment of lecturers, etc.

Experiment Station Work was also discussed, and it was decided to again ask the Local House for some action in this direction. A committee was appointed who suggested an entirely new scheme, and one that will commend itself to all. It was to establish, say five initial sub-stations for testing fruits, to be carried on by the Ontario Fruit Growers' Association, under the supervision of the Professor of Horticulture at Guelph. The idea is to select expert fruit growers, each of whom has had long experience in growing any one line of fruit, and give them each an annual allowance of money, on condition that he would make frequent reports concerning them, both to our Secretary and to the Prof. of Horticulture at the Ontario Agricultural College. An inventory of the varieties already under test would be asked of each specialist at the outset, and then the Managing Committee would fill in such other varieties as it would be desirable to have tested in that locality. From time to time, additional stations still would be added, as it might seem necessary, in order to test climatic adaptation of new fruits more fully. Any one proving himself incompetent or careless, and failing to report at the intervals stated, would forfeit the continuance of the annual grant, which would be henceforth made to some other more competent person The above is but a rough outline of the plan, which will no doubt be much modified by the Committee, but certainly no more economical scheme could be desired, and probably none more productive of excellent results.

APPLES FRIED IN BATTER.—Fry to a crisp several slices of salt pork. Core, but do not peel, large, tart apples. Slice each apple crosswise in three or four slices, taking care not to break the slices. Dip each slice in a batter composed of one cupful of flour, one teaspoonful of baking powder, a pinch of salt, and milk sufficient to make of the consistency of pancake batter. Cover both sides of the apple and fry a light brown in the pork drippings; a most acceptable accompaniment to roast veal or pork or baked fish.

APPLES AU NATUREL.—Prepare apples in as varied and delicious ways as you will, there is nothing more wholesome or tempting for breakfast or dessert than these. For a summer or autumn breakfast, line a silver cake basket with grape leaves, letting the little tendrils curl over the edges. Polish your apples until they shine—mellow Sweet Harvest and brilliant Red Astrachans—and pile in with an eye to the best contrast in color. If fortunate enough to possess a blooming morning glory vine, pick six or seven of the delicate pink and blue blossoms, place in the interstices, and you have "apples of gold in pictures of silver," that Pomona herself would be proud to own.—R. N. Y.

THE SUCCESSFUL RAISING OF PEARS.

EARS are a delicate fruit, liked by nearly everyone, the trees are early bearers, of easy culture, and they take up very little space. When once well established they bear neglect better than most other kinds of fruit. The tree has no insect enemies, if we except the fall web-worm, which occasionally locates on it, or perhaps, once in a life-time, the tree may be visited by a small colony of slugs. Pears delight in dry and sunny locations, yet will grow and thrive almost anywhere if properly cared for. If the soil is wet it should be underdrained, and for this purpose a ditch filled with the small stones that can be raked from the surface will answer admirably. For standard varieties, 20 ft. apart each way is sufficient, and for dwarfs or pears worked on quince stock, 10 ft. will usually do, though some varieties, if planted deep, will root on the pear stock and become standards, requiring more room. For market there is little profit in dwarfs, but for family use they come into bearing so early, and with some varieties they bear fruit of so much better quality that they are well worthy of cultivation.

For a small place I would advise planting dwarfs exclusively, planting deeply so that the pear stock may in time throw out roots and the tree thereby become a standard. A fertile soil is good, but not absolutely necessary.

Until the tree is well grown the ground should be carefully worked through the early part of the season, letting the work cease as early as the first of September. Dwarfs should be worked every season, as the quince stock on which they are budded has fine fibrous roots that feed near the surface, and turf left about them for any length of time is fatal to any good results. All summer varieties should be picked at least 10 days before ripening, and ripened in boxes excluded from light, and as far as possible from air. Of course they will ripen otherwise, but to secure the best possible flavor, there is no better plan. Fall varieties should be gathered two weeks before ripening, and handled in the same way. Winter varieties may remain on the trees until the leaves fall, taking care not to let them get severely frozen. Pack them away in a similar manner as recommended for the earlier varieties, and keep as near the freezing point as you can until you wish to use them. A few days in a warm room will then ripen them rapidly.—Farm and Home.

THE RECUMBENT APPLE. — Mr. E. Reeves, in a paper before the Iowa Horticultural Society, says : Later comes the Hibernal family of apples, which includes Hibernal, Recumbent, Silken Leaf, and others. All are perfectly hardy and vary but little in fruit. Recumbent is the most widely distributed, and is among the best. Fruit large and the best cooking apple I have tested among the Russians. It is the best apple we have for pies, but for eating from the hand, is simply atrocious. Season, November to January.

JAPAN PLUMS.

F these fine and splendid plums I wish to state that my experience is limited, but so far as tested on my ground they far exceed my expectations, and I believe this is true in all parts of the United States where they have been tested. No fruit of recent introduction is meeting the expectations of fruit growers throughout the entire country equal to these oriental plums. Their high quality, size of fruit, smallness of pit, earliness in bearing, great productiveness, handsome color, freedom from insect pest, long keeping and shipping qualities, recommend them as fit companions for our finest natives.

These Japanese plums so far on my ground have been a surprise to me, especially their power to endure a low temperature, having stood 26 degrees below zero without showing a tinge of frost, and remaining healthy to the terminal bud. The past season the Burbank and Ogon bore a heavy crop for such young trees, and these same trees that bore so heavily this year, are extremely full of fruit buds for the coming crop next year; this indicates great productiveness, and these plums bid fair to be heavy annual bearers. Just why these fruits, from their far off island home in the Pacific Ocean, with a mild and genial climate, should have such power of endurance in our cold continental climate, one thousand miles from the ocean influence that they have been surrounded with, has been a puzzle to me; but after watching them side by side with our hardy natives the past four years, and witnessing their splendid behavior, I have been forced to the conclusion that there was once a close relationship between our natives and these Japanese introductions, and that in the preglacial climate they had a common origin in North America. Their habits and growth are so much more in harmony with our natives than those from Europe, that I am quite sure at one time ancient America and Japan were closely related, and either the ancient Japan climate was more in harmony with our present diversified climate, or these plums and our natives had a common origin in North America. Such hardy Chickasas as Golden Beauty, Honey Drop, Chas. Downing, Col. Wilder, and Wild Goose, also of the Miner group such plums as Miner, Hammer and Rockfort are connecting links that chain our native plants to some of these oriental sorts like Satsuma, Burbank, Yellow Japan, Ogon, etc. The points of similarity noted are early shedding of leaves and maturity of wood early in the fall like our natives, multiple of leaf buds like native sorts named above, also color and roughness of bark, and fibrous condition of inside of fruit. There doubtless are many more points of resemblance that will reveal themselves as we more closely study and compare with our natives, however, we must not expect too close a resemblance for they have been separated for thousands of years, and the conditions that have surrounded them were so

radically different it has almost blotted out their connection. When we realize that these orientals became separated from our natives, and surrounded with a genial climate, show the influence of a high civilization for unknown ages, while our natives had to struggle against climate, savage beasts, wild and destructive races and tribes of mankind, and were left entirely to natures's law, the "survival of the fittest," in the great struggle for existence, the only wonder, it seems to me, is that, under such different conditions and treatment for ages, we can find a trace of their origin and relationship. I have expressed my views to some of our Pomologists, and will give brief extracts from a few of their letters, bearing on the subject.

P. J. Berckman of Augusta, Ga., says: "Your idea of a connecting link of the flora of Japan with that of the North American continent coincides with what my dear old friend, the late Prof. Asa Gray, once told me, that he found a wonderful similarity between some of the plants of the United States with their congeners from Japan, which made the study of the latter so very interesting to him. You modestly term yours a wild idea; permit me to say that it is far from such, and really, in your letter, you but substantiate facts."

Prof. Bailey, of Cornell University, New York, says: "I am much interested in your letter upon the Japanese plums. The fruits of Japan and the United States are really very closely related. The two countries were once connected at the north-west, and the flora of both originated far north, and was driven southward by changes in external conditions."

Prof. G. Goodale, of Harvard University, Cambridge, Mass., says: "You will find in the Article Sequoia, in Dr. Asa Gray's Darwinia, an account of his views in regard to the relation existing between the vegetation of Japan and parts of the United States. It is very interesting to know that you have independently, by your study of plums, arrived at the same conclusions as to many points."

W. A. Taylor, Assistant Pomologist U. S. Department of Agriculture, says: "In regard to the Japan fruits about which you write, I am glad to receive your report concerning them. Your conclusion on that they must have been native in a more severe climate than that of Japan, is no doubt a correct one."

Prof. C. S. Sargent, who has devoted much time to the investigation of Japan trees, and who spent the summer in Japan this year, states that he finds no wild representative of the species to which the cultivated Japanese plums belong."

J. L. Normand, of Marksville, La., writes: "I find that the Japanese plums have a wide geographical adaptation in the United States; most of them will succeed from the great lakes to the Gulf coast, and as to their relationship with our native sorts, the more I study them, the more I find that they sprung from the same race of plums. The flora of Japan and the United States has a close resemblance in many of our wild plants."

Prof. C. C. Georgeson says: "that the common wild fox grapes of this country, *Vitis Labrusca*, grows wild in Japan." These plants are silent witnesses which unmistakably prove that this continent was once connected by land with Asia. The American Indian, with his high cheek bones and Mongolian features, are strong evidence that they are of Asiatic origin. Here we have better proof than the ancient legend of the "Lost Atlantis," that North America was once connected by land with Asia.

In closing, permit me to say if my conclusions, on the affinity of these fine Japanese and our native plums, are true, it opens up a new era in plum culture; for here we have introduced a fine fruit that, doubtless, is related to some of our hardy Chickasas, or other natives. In their large size and fine qualities lies the condensed improvement brought about by the scientific combinations of the life forces of these Oriental plums. So, really, to the Japanese horticulturists we owe much, for we at once can avail ourselves of these wonderful fruits which it has taken, perhaps, thousands of years for them to develop, while our natives were left for nature to improve under the law, "the survival of the fittest." By cross-breeding our natives with these fine Orientals, we gain these long ages of improvement made by the Japanese horticulturists. Already, much has been done by J. L. Normand, of Marksville, La., who has produced hundreds of new seedlings, which are cross-bred with our natives, and many of them are said to be fine, and I look forward for great results on my ground of these cross-bred seedlings.

Cedar Rapids, Iowa. A. B. DENNIS.

STICK TO IT.—The New England Farmer says: "If we would make money raising small fruits we must go into the business to stay, not for a year, but for many years or for life. There will be bad years for fruit growers as well as for producers of any other products, but those who learn the business most thoroughly, and who establish a name for quality of products and for fair dealing, will be the ones to succeed in the long run. They will have to sell with little profit some years, when everybody else is in it, but they will make the money when others fail from ignorance of the business or because of periodical under-production. It is the earnest workers and steady plodders, after all, who come out ahead in the struggles for existence."

EATING GRAPE SEEDS.—It is growing more and more the fashion—and a good fashion it is—not to swallow the seeds of grapes. Appendicitis is more and more feared as a result of swallowing grape seeds. The seeds lodge in the vermiform appendix and the almost incurable disease follows. That appendicitis is more common nowadays than in times past may be owing to the fact that more grapes are eaten, as production is greater, and the price reduced accordingly.

THE WEST WIND.

T is strange how many people have never got acquainted with West wind. A friend, who keeps a domestic observatory, was showing me his records—taken three times a day—and in the month just past there were twenty days of West wind. And the whole year will show even a larger proportion than that, and yet people will build houses on the east side of a street in a village ; and wonder " Why they get so much *dust ?*" And have their stoves in the east end of a church, and find " so much difficulty in getting the building warm at the farther end ! "

Our ecclesiastically-superstitious forefathers were accustomed to think and and say a great dea about " Or entation." It seemed a great thing to get the exact point of the sunrise on some particular day. As for instance, if a church was to be built in honor of St. George, then a solemn vigil must be kept all the night preceding the 23rd April : and as the sun rose on that morning, the exact east or south-east point must be secured, so that the " east end of the church shall face exactly *so !*" And thus they got the true, " Orientation " of that particular saint's church.

Not for honoring mediæval saints but for the very useful purpose of keeping ourselves warm, we ought to give a good deal of attention, not to the orientation, but the *Occidentation* of our dwellings and public buildings. Kee-way-tin, whom Longfellow describes in Hiawatha as the north-west wind, is a very persistent fellow ; and we need not think, by naming an ever-shifting and somewhat visionary territory after him in the north-west, to get rid of his presence here ! But in reality our ever-present friend is rather south-west than north-west. From Prof. Maury, the best authority we have on marine and aerial currents, and all that results from them, we come to the following deductions :

The great bulk of the earth at the equator, as it swings easterly on its axis, fails to carry the thin fluid of the air with it as fast as it moves itself ; and there is the same contrary current we would feel if carried swiftly forward on a perfectly calm day. Hence, the trade, or easterly winds of the Tropics. These extend as far on each side of the equator as the vertical sun is found ; or 23½° north and south latitude. As the heat is greatest in the centre of the heated region—the equator—there is drawing toward the centre from both sides ; and the east wind has a little north or south in it, as it blows respectively at the north or south of the equator. As the great recoil or eddy of this ever-present eastern tropical wind, the prevailing winds of the temperate zones are west—somewhat south-west. Every orchard in the country leans to the east ; every open shed—if the farmer has any sense—has the west wind at its back.

We used to be taught in school, (I wonder if it is in the geographies yet ?) that the Gulf Stream made a mild climate for the British Islands. The fact is,

that it is the condition of the west wind that makes the climate. The mere proximity of the Gulf Stream doesn't do it except mediately, and in a small degree; for the Gulf Stream is nearer to Nova Scotia than it is to Britian, and it does not give Nova Scotia a mild climate. The west wind that srikes British Columbia and Washington territory, is a moist wind; and consquently, those coasts have a mild climate, like England. In passing over the Coast Ranges and the Rocky Mountains, the wind is robbed of its moisture, and becomes a dry wind and therefore a cold wind—as it sweeps easterly over the British Territories. By the time it gets to Labrador, it is perfectly Arctic. Now, *that wind* pursues its course over the Atlantic, and by the time it reaches the British Isles, it has again become a moist wind, giving a moist, mild climate. It goes on crossing the Scandinavian mountains and other moisture-robbing elevations, and by the time it reaches Russia, it has again become a dry, cold wind, giving a dry cold climate. On both continents, the west and east coasts respectively, show a vast difference of temperature, at the same latitude—and for the above reason.

This all points to the fact, that if we would be sheltered from the cold, we must be sheltered from the west wind. Hence, in the country, the great value of timber-belts for shelter; for crops, for houses, and to prevent so much drifting of the roads. I am glad Mr. Phipps has taken up the subject so vigorously. It is no use wishing he had been in the vigor of his life forty years ago—when his appeals would have done so much good, in hundreds of townships so now denuded of their wood—for then people would not have listened to him. Several farmers have expressed to me their regret that the township they live in has been so completely stripped. "Not a sheltering belt of timber," said one of them, "after you pass this one, for six miles up this line!" "Well," said a young girl in the sleigh, "I know that the strip of bush next our house, makes us a great deal warmer; and we sometimes have apples hanging thick on our trees, when other orchards are badly stripped with the winds." And though it may be too late to save belts for shelter in many places, yet there are many newer neighborhoods where the advice is still practicable. The narrowest shelter-belt I ever saw, was in the County of Bruce, where a rather fancy fellow, a bachelor, had run a double fence along his front, after he made his first clearing. A space of twelve or sixteen feet was, when I saw it, growing up thickly with all kinds of "soft stuff," making a beautiful front. In older clearings the belt must needs be planted.

Much of the survey of Ontario is "on a skew; much to the disgrace of the surveyers, and the Crown-land officials, who permitted it. West of Toronto, are no fewer than twenty-five three-cornered townships! In very many townships, therefore, there is one end or side of the farm directly facing the north-west. Let a strip, at least ten rods wide be left, all across that side of the farm. And if the same is done for the south-west side, all the better. But these angles are sometimes the man's *front*, and already cleared. In that case,

a narrow belt only, as a double row of Norway Spruce, or two or three rows of maple and native spruce mixed—or something of that nature—could be tried. Only, the stock must not be allowed to browse and trample them. By far the quickest-growing of all our trees is the willow. And it might be taken into consideration, whether a belt of a few rods wide, across the north or west side of a farm, of the straight-growing white willow, would not be a very profitable investment—both as a shelter, and a self-renewing source of firewood. They find in Manitoba that these soft woods burn moderately well when well seasoned.

And then, when the continual drift of the air is from west to east, in the open atmosphere, how can it be otherwise inside of buildings? Stoves are in the east end of a church; and long pipes struggle to carry the smoke and the heat, *against* the current of the atmosphere! No wonder there is dissatisfaction; and no wonder the minister and the choir are half-frozen! If you have a stove near the east end of a house, the heat is fully half lost. Every time a door is opened, the heat—either by being driven or drawn—is taken away from the west end of the room and house. A little consideration on this point would often indicate where the chimney and the stovepipe holes should be.

And a little of the same consideration would often decide the site of a school-house, as well as of a church. Unless there is not another possible site to be in anywise obtained, never build a church or school facing the west. If it must be so, then have the stoves near the door, and let the heat *flow in*—as it will do, every time the door is opened. At the same time, an immense amount of cold air also comes in. With the front the other way, and the registers or stoves in the west end, every opening of the east door would let out a quantity of warm air, but would admit little or no cold air.

For one other thing, and one only I shall claim the gratitude of your readers—the suggestion of double windows for the north and west sides of dwelling-houses I never knew the benefit of them till once I tried them. Far less firing, far more comfort, no more havoc with house-plants; and as for ventilation, our trouble was the general one—"too much draught" everywhere!

It has probably never occured to many people, that there is a continual "drift" of the air in buildings; particularly in large public buildings, where no partitions interfere. And it is only common wisdom to take this fact into consideration, in the direction a building faces, in the arrangement of rooms and flues, and in the location of stoves and registers.

St. Catharines. W. W. SMITH.

APPLE CREAM.—Peel, core and steam six or seven large, juicy, sour apples. When tender, cool, and rub through a sieve. Add 1½ cupful of sugar, the whites of four eggs beaten to a stiff froth, and a quart of cream. Freeze, turn from the mould, and serve with sponge or jelly cake.

NOTES ON SOME GRAPES SENT OUT BY OUR ASSOCIATION.

The Burnet.

E know of few grapes that there is such a difference of opinion about, as the Burnet. I have had visitors pick it out as the finest grape in my garden, while others do not care for it at all. Some growers speak very highly of it as a fine flavored profitable grape to grow, while others say it is worthless, and both views may be correct, as few grapes depend more on proper conditions to do its best, than the Burnet. If planted in a warm sunny spot, well fed, and not allowed to overbear, it is large in berry and bunch, a heavy bearer and the highest flavored grape in cultivation; more like a grape grown under glass than any of our outdoor vraieties, but if planted in the shade of tree or house, it is small in size and sour, very subject to mildew, and in unfavorable seasons also does not ripen.

Prentiss.

Either the introducer drew a very long bow when describing the quality of the Prentiss, or it must depend on some peculiar quality of soil or climate, to produce the best flavor. I had no fault to find with the quality or appearance of the crop; every year it was heavily laden with medium size bunches of handsome green fruit, but so poor in quality that no one would eat them.

Brighton.

If there is any one grape that can be said to be the very best, that one is the Brighton, though not without faults, its good points are so numerous that it stands unrivalled among our outdoor grapes for amateur cultivation. Bunches medium to large, compact and handsome in shape; berry medium in size, of a beautiful shade of red, skin thin, seeds small, flesh free from tough pulp and remarkably sweet and delicious in flavor. What more would any grape lover ask for? The only weak points I can see in it, is that it is somewhat deficient in pollen. It grows alone or alongside other varieties, with the same characteristics, like Rogers 3 or 15, or Crowling, the bunches are sometimes open and few in number, but if it is near neighbor to a vigorous pollen producing variety, such as Concord, Niagara, etc., the bunches are large and compact and the yield heavy. It seems also to be more subject to the influence of shade than most grapes, to do its best it must have a warm sunny situation. In a favorable location, I have picked bunches quite ripe on August 28, while the same season other vines that were shaded by trees did not ripen properly at all.

Moore's Early.

If it could only be made to produce a paying crop Moore's early would be the most valuable of all grapes for this latitude. It is so early that it ripens perfectly every year. Its only competitor in earliness is—that type of everything objectionable in a grape—the Champion. The bunch is rather small, but the berry is very large, of the same type of flavor as the Concord, and Worden, but to my taste it is superior to any Concord I have seen grown in this district. The amount of heat, in the average summer here, is not sufficient—except in very favored locations—to fully ripen any grape that does not mature before the Concord, hence the great value of a variety like Moore's Early, that we can depend upon to ripen even in the most unfavorable seasons.

Ottawa. R. B. WHYTE.

PRUNING TO KEEP FRUIT TREES DWARFED.

THERE are cases where a person has fruit trees growing in a comparatively small space, and it is desirable to check their growth and keep them dwarfed. With this object in view, a very special system of pruning would be necessary, and the object would be to get growing branches nearer to the ground and not up in the air a long distance, where the trees would make large spreading heads. In order to accomplish this, one has to prune out, during the summer, most all the strong and vigorous growths at the apex of the plant, so as to throw the course of the sap into the branches near the ground; for, in a state of nature, the tendency of the tree is to go up, and to go up as rapidly as it can, and the upper branches are, therefore, the strongest, and the lower branches are the weakest. To cut the strong ones out, therefore, strengthens the lower ones. It is on the same principle that we prune hedges. These we keep low, and for this reason the plants are pruned in the summer time. The strong, vigorous branches—the top of the hedges—being the ones cut out; and this throws the sap into the branches near the ground, thereby strengthening them and making them of equal growth with those at the apex—and this work has to be done during the growing season. If the same kind of pruning were done in the winter time instead of the summer, the result would be that the next spring innumerable strong shoots would push out where the upper ones are cut off—and growing so strong they would absolutely draw the nourishment from the lower branches. The pruning is done in this case while the sap is in vigorous circulation, so that the channel may at once be turned into these lower branches. One might take up any number of questions of trees in detail—apples, cherries, plums, grapes, or whatever it may be—and the lesson is the same for all of them. If you want to keep trees dwarf, with abundance of good growing branches near the ground, cut out all the strong shoots at the apex during the growing season. From time to time, we may give other similar lessons in regard to other objects of pruning—*Meehan's Monthly.*

PROFIT IN SPRAYING.

THE fact that one well known plum grower at Winona, Mr. George Cline, has been practising spraying for ten years past; that he treats his large plum orchard with four or five applications every season; that he has so convinced himself of its benefits that he will not omit it for a single season, and has purchased a machine, for utilizing the power of the wheels to do the pumping, at a cost of nearly one hundred dollars, and that his orchard yields annually large crops of plums, is surely sufficient evidence of the benefit of spraying with Paris green to destroy the curculio, and to lead all plum raisers to try it for themselves.

If additional testimony is needed we may quote from the experiments of W. J. Green, Horticulturist Ohio Experiment Station, bulletin 18, in which he gives the following summary of results:

(1) The profit to be derived from spraying orchards often exceeds $20 per acre, and for vineyards is much more. The fruit crop of the State would be enhanced in value by several million dollars annually if the practice were generally followed.

(2) Combined fungicides and insecticides are recommended whenever applicable, because of a saving of time; a less liability of injuring foliage; greater efficiency in some cases, and as a precautionary measure in others.

(3) Dilute Bordeaux mixture, copper-arsenic solution and ammoniacal solution of copper carbonate are the most useful fungicides for the treatment of the diseases herein mentioned, and the first has the widest range of usefulness of all.

(4) Early spraying is the key to success in the use of fungicides.

(5) For the plum curculio and shot hole fungus use Bordeaux mixture and Paris green combined, making three or four applications.

It is not known that this treatment will prevent the black knot, but cutting away and burning the diseased branches will accomplish the result.

(6) Scabby apples rot much earlier than those free from scab, and spraying with fungicides will save at least 50 per cent. of this loss.

(7) Spraying with fungicides in the season of 1892 prevented much of the early dropping of apples, which is usually attributed to wet weather.

(8) For apples, two applications of Bordeaux mixture before blooming are advised, and two of the same mixture after blooming, with Paris green added.

(9) The same treatment is recommended for the pear as for the apple, before blooming, but the copper-arsenic solution is advised after blooming.

(10) The Bordeaux mixture, if used too late, causes a russet appearance on both pears and apples.

(11) The quince may be treated the same as apples, or with Bordeaux mixture alone.

(12) The treatment advised for the cherry consists in making two or three applications of Paris green, 2 ounces to 50 gallons of water.

(13) Peach trees and American varieties of plums have very tender foliage, and must be treated with very weak mixtures, if at all.

(14) Raspberries may be treated with Bordeaux mixture alone; grapes with the same until the fruit sets, after which use copper carbonate. Potatoes should be sprayed at least five times with Bordeaux mixture and Paris green.

ABOUT CULTIVATING ORCHARDS.

THE diverse treatment which orchards receive throughout the country affords a lesson showing the great benefit of giving them the best management, and the loss from neglected treatment. Neglect is too common, and poor crops and scabby fruit is the result. In contrast with these neglected orchards, are a few to which the owners give the best attention, and who receive good prices for the copious returns of handsome fruit. One orchard of this class, which has grown to full bearing size, affords the owner a handsome profit every year, while his careless neighbors receive not more than one-fourth of his returns. This well-managed orchard is kept in grass, which is grazed short by sheep, the grass afforded them being only one-half or two-thirds as much as would give them full feed, the deficiency being made up with grain or meal. This is fed to them regularly in long broad troughs. The sheep eat every wormy apple as it falls, and the fruit is thus kept nearly clear from insects. The droppings of the sheep enrich the ground, and a top dressing of barn manure is added yearly. The sales of the fruit from this orchard for many years have been equal to one hundred dollars from each acre it occupies. The shade of the apple trees prevents a rank growth of the grass, and the grazing of the sheep gives it somewhat the appearance of a lawn. The owners of some other excellent orchards, who cannot use sheep, apply yard or barn manure more copiously. In one of the finest visited, the annual application of manure had gradually made it two or three inches deep; the result was a superb crop of apples. Other orchards, with less manure, are kept clean and mellow with a gang plow or Acme harrow, to keep the surface clean and in a finely pulverized condition.—Ex.

LAYING OUT AN ORCHARD.

THREE objects should be considered in laying out the orchard: symmetry of appearance; economy of space; and facility for future care. In California, where millions of trees are planted annually, various methods are used. Many are now planting in what is known as the triangular or alternate system. This method gives more trees to the acre than the square system, and in case of apple trees, every other row can be planted to peaches. As the life of the peach tree is short, several crops of fruit may be gathered before any serious damage is done the apple trees, and before crowding, the peach trees can be removed. In laying out an orchard to be planted in this manner, take three pieces of timber one by two inches, and of the length that the trees are to be apart. Miter and fasten the corners together with pieces one inch thick and six by eight inches in size. These should be fastened firmly with two-inch screws. To make the triangle strong, the pieces should be turned on edge. After the triangle is fastened together, measure off the exact length it is desired to have the trees apart, and bore an inch hole through each corner of the boards, being careful that the holes are exactly the same distance apart. Places the three braces across the corners, and the triangle is completed. Stretch a line or a wire on one side of the track to be planted, the proper distance from the fence, place two corners of the triangle exactly on the line and set a stake through each hole on the line, also one in the third corner. Move the triangle along the line, placing one corner over the stake and the other corner on the line and drive the stakes as before. After the first and second rows are staked off, only one row is set at a time, while the two corners of the triangle are kept over the last row of stakes. There should be a person at each corner of the triangle.

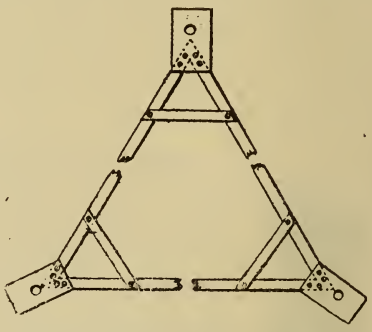


FIG. 409—TRIANGLE FOR ORCHARD PLANTING.

FIG. 410.—PLANTING BOARD.

After the stakes are all set, bore an inch hole in each end of a board, four inches wide and six or eight feet long. Cut a notch in the centre, place it against the stake, drive a stake through each hole in the end of the board, and remove the centre one. The hole is then dug, and when ready to set the tree, lay the board over the stakes and place the tree in the notch. The same plan can be used in laying off an orchard by using a square instead of a triangle. All the

measurements must be exact, or the triangle will not fit when placed over the stakes. In this way it is no trouble to keep the rows straight, no matter what length they may be. The stakes should be fifteen to eighteen inches in length, and somewhat smaller than the inch holes in the triangle, so that they will work easily.

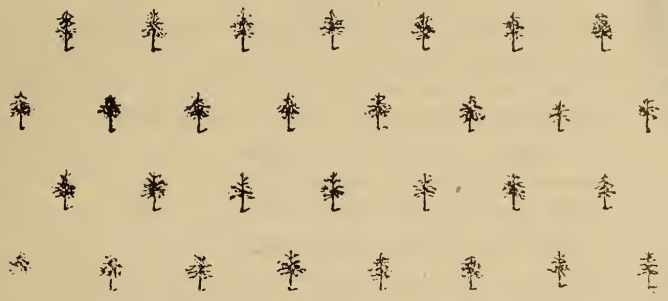


FIG. 411.—ORCHARD PLANGING IN THE TRIANGULAR SYSTEM.

PRUNING THE GRAPE VINE.

THE grape vine accommodates itself to almost all methods of treatment, and, with reasonable care, gives abundance of fruit. The necessity for good, rich soil, well drained and cultivated, the same as for other fruits, is generally admitted by all, but proper pruning, the easiest part of grape growing, seems to be the least understood of any part of the work. It must be remembered that the vine bears its fruit on shoots of the same year's growth, from eyes on the previous year's wood. It is necessary to understand this, because it is necessary to keep up a supply of young wood wherever it is desired the fruit should grow. A one or two-year-old plant, when sent from the nursery, may have only one shoot, or it may have several; in any event, all should be cut off but the strongest one, and that cut back to within two eyes of the base. These two eyes will produce shoots the following season, and when they have made a growth of a few inches, rub off the weak one and let the strong one grow until September, when the end should be pinched off to ripen up the wood. Late in the fall, cut back to within three eyes of the base. All side shoots and suckers should be pinched off. The second year the strongest shoots from these three eyes should be preserved as before. The third and succeeding years allow only the strong canes to grow with branches to compare with the vigor of the vine. Trim all vines severely in the fall, leaving spurs or canes of new wood, containing two or three eyes each, for next summer's fruit. After pruning, lay the vine down and protect for winter, the same as blackberries and raspberries.—Farm and Home.

PORCH DECORATION.

WE give an illustration of vine decoration of the porch of a country summer home not far from the city of Chicago. The vines are now in their third season's growth. They were all loosened and laid back on the ground last spring to allow re-painting the house. When these vines were purchased they were the ordinary sized plants sent out by the nurseries. They are mainly large flowering clematis, and *Akebia quinata*, the only exception being a golden netted honeysuckle set out at each side of the steps of the porch, two feet out from the akebia vines, and trained over a fan-shaped piece of brush from the woods. This honeysuckle needs protection here in winter. We get short forked branches and set them thickly into the ground close to the vine which is cut back to two feet in length, and wound over the fork, and then leaves put in under and above them, and a few pieces of long brush laid over to

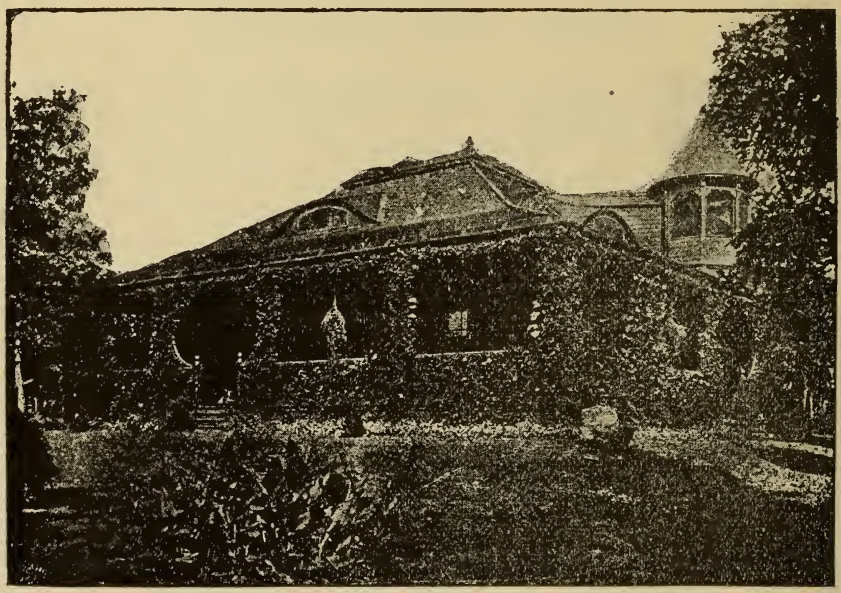


FIG. 412.—PORCH DECORATION.

hold the leaves in place. In this way they winter nicely. Heavy manure or straw litter that will get matted down is apt to kill them.

In the fall of 1889 a trench three feet wide and two and one-half feet deep was dug close to, and around the porch, and filled up with a rich compost of rotted manure, rotted sod, leaf mould, sand and black earth from an old corn

field. The old earth was wheeled away. The following spring two vines of *Akebia quinata* were planted at each post, and clematis between the posts, three feet apart. A frame of wood, on which was stretched a stiff 4-inch mesh of galvanized wire netting, was screwed on to the porch railing between the posts reaching to the middle of the top railing, and to within three inches of the porch floor, thus allowing the water to run off the porch. On this porch the clematis are trained each spring. The trellis for the akebia consists of two side iron rods ¼ inch thick, placed 6 inches apart, with coarse wires crossing obliquely from side to side, forming large meshes. The side bars extend ten inches beyond the mesh at the upper end, and three at the bottom. These bottom ends are bent abruptly in so as to form a right angle, and when in place rests on the top of the "noseing" of the porch floor. The cap at the top of the porch post extends two inches ont from the face of the post. When putting up this trellis, the upper side bars are laid against the capping, and the bottom of the ends rests on the noseing, thus the main portion of the trellis stands two inches out from the posts. An ordinary staple is driven over the two upper ends into the capping and also at the bottom into the noseing, but in no case driven so far in as to tightly bind and prevent slipping out when desired. To fully secure it in place, a piece of L shaped iron is used, having a screw point at the longer angle which is screwed into the post near the middle, so that the shorter end presses tight against the wire mesh at some point where the wires cross. To carry the vines along the top from one post to another, three hooks are screwed into the middle of the outer face of the wood work under the eaves, one in the centre and one at each end. These hooks are formed like the figure 9, with the right side of the loop not closed, and when in position the eye is downward. Into these loops is laid a ½ inch iron rod extending from post to post. The main vine is trained on this rod, and side shoots or new ones from the roots are tied to small double-pointed tacks driven above and below the main rods, thus widening the belt of vine.

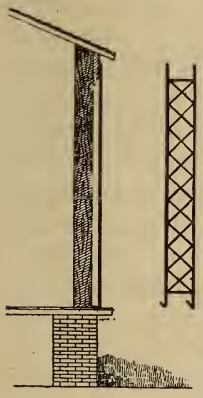


FIG. 413.—THE WAY TRELLIS IS ATTACHED TO PORCH.

In the north the akebia loses its leaves about Christmas and regains them very early in the spring, under the eaves and similar protected situations, it often retains them until spring, and in warmer climates it is an evergreen.

Each fall all the clematises are cut down to within one foot of the ground and their crowns covered with leaves, and a V shaped wide wooden trough placed over them to keep them dry. The balance of the soil is covered thickly with well-rotted manure, and, all that can be is worked into the soil in the spring. This is done each fall.

To prepare the porch for re-painting, withdraw the screws from the clematis

trellis and remove them ; then take out the L shaped screw from the centre of the akebia trellis, cut any of the material used in tying the vine to the double-headed tacks above, and slip the top iron rods out endways from the vines. Then draw the bottom of the trellis outwards, from the staples below and then downwards from the staples above and lay back on the ground. To replace, shove up the top into the upper staples and in below to the lower ones. Replace the L shaped screw and work in endways among the top vines the loose rods and lay them in their hooks and re-tie to the double-headed tacks.

The akebia is very pliable and tough ; in fact, in Japan, their native place, they are often used in basket work, and will stand considerable disarranging when not in leaf. The two short panels, on both sides of the entrances, are covered with the akebia of this season's planting, and above them is fastened to the wood-work by tying to the double-headed tacks until they reach the iron rods above. The akebia in this locality is very hardy, but needs a rich soil for full development. Ageratum, of the heliotrope shade, is planted thickly at the base of the vines, which, with the clematis presents a pretty picture of color all season.—Gardening.

WINTERING GERANIUMS.

In its natural state the geranium is a plant which is never wholly at rest it is, however, very amenable to treatment in cultivation, and very patient with bad usuage. The proper treatment for bedded plants intended for another season's planting is to take them up carefully and pot or plant in boxes, and stand in a light place in a temperature secure from frost, yet not high enough to excite active growth. Under these conditions a very little water would be sufficient during the cold season. When the weather becomes milder in spring, and plants start to grow, care for them properly, regulate the growth and disposition of the branches, and thus prepare them for planting at the proper season. But one may not have the facilities to care for the plants in this manner, and yet want to preserve them. A damp cellar is not a suitable place, and may cause them to mould and decay. The plants when taken up can be placed in boxes, most of the foliage be removed, and soil be made only a little damp ; then place the box or boxes in a dry frost-proof cellar where there will be some light. The leaves will soon all fall. By the first of March it will be best to place the boxes containing the plants in the window of a moderately warm room, and give water and start the plants into growth. Some leave the plants in the cellar until the weather is warm enough to set them out, but they are then in a very enfeebled state, and it takes a long time for them to recover. —Prairie Farmer.

THE OLEANDER.

THE Oleander in its native habitat, and in some of the Southern States where it has become acclimated, attains a height of from twenty to thirty feet, but in the North it may be kept within any desired limit by judiciously pruning. It is said to have been introduced in 1599 from Palestine where it grows along the banks of the Jordan and other watercourses. It is easily propagated from cuttings, which root readily in wet sand or in bottles of water set in a sunny window. When the new roots are about an inch in length the cutting should be potted in rich, mellow soil, and as soon as established it should be given plenty of sunlight and moisture.

The oleander delights in a rich, mellow soil; black dirt from the shore of pond or the edge of a swamp, made mellow by the addition of sand and well rotted stable manure, seems to meet its requirements. It is a moisture-loving plant and should have an abundance of water, especially during the blooming season, but the drainage must be good so that there may be no stagnant water about the roots. It is a rank feeder, and when growing well should be supplied with some liquid fertilizer as often as once each week. Diluted leachings from barnyard manure make a desirable fertilizer for it; so, also, does soot tea, prepared by putting wood soot into a thin bag and pouring scalding water upon it. Use when cold and about the color of tea. As a special fertilizer small bits of fresh fish buried in the soil about the roots will be found satisfactory. Repot the plant or change the soil at least each year. Treated in this way and given plenty of sunlight a plant should be in bloom in about nine months from the cutting and may, perhaps, show mnch finer bloom than the plant from which it was taken, not only at the first blooming season but subsequently. It may be finer, not only in size, but in form and color as well. One cutting taken from a plant that bore small pale semi-double flowers, bloomed at nine months' old, producing large clusters of very double flowers, each four and one-half inches in diameter, and of a deep rich pink in color.

The oleander is almost a perpetual bloomer if well treated, but nearly all prefer to give it a season of rest during the winter, which produces a greater profusion of bloom in the spring. It will bloom again in the autumn. It is rarely troubled by the insect pests that prey upon other house plants. The leaves should be washed or sprayed occasionally to keep them free from dust. It grows rapidly and is usually of a symmetrical form.

When too large for further use as a house plant turn it out of the tub or pot in the spring and set in rich, mellow soil in the open ground, as soon as all danger of frost is over. Give a daily and abundant supply of water and it will give a magnificent display of bloom all the season. In autumn, before frost, lift it

carefully with as large a ball of earth as possible and set it in a tub or box, in which it may be removed to the cellar. Give only a sufficient amount to keep the leaves from falling, and in the spring, when the weather has become warm, return it to the garden again.

There are many varieties of this old favorite, all beautiful—both single and double, all deliciously fragrant. Among the best are Prof. Durand, double white flowers with creamy white throat ; lutea, single yellow ; gloriosum, double carmine pink ; Kenwood, large, double rose ; purpureum simplex, purple.

The sap of the oleander is poisonous ; children should not be allowed to play with the broken stems or leaves, and they should be kept out of the reach of cattle and horses.—Vick's Magazine.

SOIL FOR ROSES.

The best soil or compost that I know of for roses is fibry sod from a pasture and of a medium heavy texture, that is, a soil neither light nor yet the extreme of heaviness. Sod taken from a very old pasture, or a piece of land that has been lying idle for a number of years without being grazed or mown, is very liable on being rotted down to be really too light for roses, and after being in the beds for a few months will somewhat resemble leaf-mould. Experience in that line has caused me to fight somewhat shy of sod taken from idle pieces of land that has not been grazed or mown for years. The accumulation of vegetable matter in the way of grasses, mosses, leaves and other herbage, gives it that leaf-mould appearance when thoroughly rotted down, and it is too light. Having procured a suitable sod and a supply of pure cow manure, it is best to stack or pile it to rot. If wanted to use in April or May, or June, it ought to be stacked in August to have it sufficiently rotted. It is a hard matter to lay down any rules for the proportions of manure to use to the quantity of sod, for the reason that the nature of the soil itself varies in so short a distance. The guide that I follow is simply this : Knowing where it is procured, I take into consideration the nature of the grass crops or pasturage raised from it. For instance, if from hay-land, which has yielded a fairly good crop, of course it stands to reason that such sod will not require such quantities of manure as sod taken from a piece of impoverished land. Thus while in some instances it is only necesssary to use, say, one-fourth, in others it is absolutely necessary to use one-half manure. It should always be borne in mind that roses require a good rich soil. I don't know of any instance where the gardener has to use common sense and judgment more than in the selection of soil for rose growing.—American Florist.

"KATE, what's become of the porous plaster I left in that desk ?" "Porous plaster ! Why I thought it was one of those new postage stamps, and I put it on a letter to ma."—*Life.*

THE SPIRÆAS.

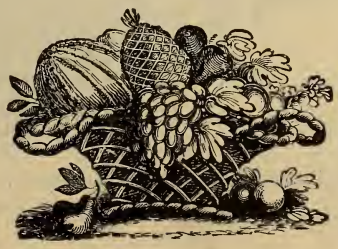
ONE of the most popular class of shrubs in the door yards of Southern Ontario is the Spiræa, because it is so easily grown and propagated; so pretty in bloom, so useful in decorations, and many species are so hardy. Then, in planting a large houseyard, or park, the spiræas are well adapted to the requirements of the landscape artist who desires to round out the outline of his clumps of trees and shrubbery well down to the green sward.

The spiræas are by no means new favorites. Away back in ancient Greece, Theophrastus called them by name, and the Greek word speiræ, I wind, seems to be the derivation, alluding to its use in making garlands. There are some fifty varieties known, of which three are found natives of Canada, under the common name, Meadow Sweet, viz.: S. opulifolia, S. salicifolia, and S. tomentosa.

A very popular variety in our gardens is Spiræa van Houttie, a variety that seems hardy, a healthy grower, showing very little dead wood. On this latter account it is a great favorite with many planters as an ornamental hedge for separating the vegetable garden from the lawn.

S. astilboides, which is shown in the engraving, is a handsome Japanese variety, of somewhat dwarfish character, and of very graceful habit. The flowers are white, in spicata panicles. It would be well suited to the mixed border, or to rockery decoration; though it is particularly at home in a moist locality. How hardy it is, the writer is not able to say, but possibly some reader may have some experience to offer.

Another Japanese variety, S. prunifolia flore-plene, is cultivated in Canada gardens, under the nama of Bridal wreath. It is quite hardy and very pretty, with flowers in little rosettes about a quarter, or one-third of an inch in diameter, arranged along the slender willowy shoots.



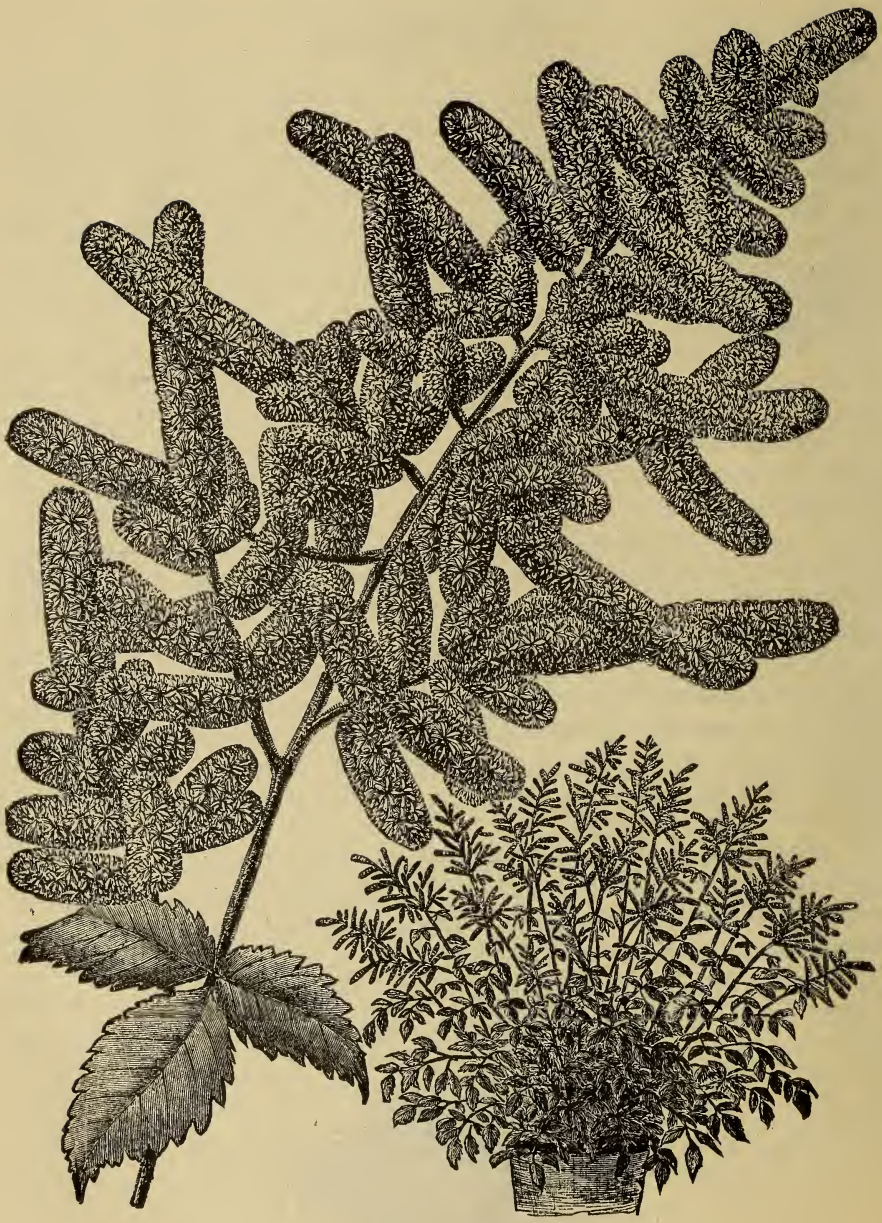


Fig. 414.—Spiræa Astilboides.

MARKET GARDENING PROFITABLE.

THERE is no doubt that vegetable gardening is a profitable occupation, where one makes it a specialty and uses some judgment in his work. Indeed many a gardener who understands his business, makes more money off a few acres of ground than some farmers off a farm of one hundred acres. There is scarce a village in Ontario so small that it would not support one or two vegetable gardeners, and the larger towns will consume the product of many gardens. The fact is that many people who have gardens, find it pays them better to buy from a gardener than to grow what few things of each kind are wanted each week, and when visited by a truck wagon two or three times a week, gradually cease to grow the poor and meagre stuff which it has been customary for them to produce, and buy the fine large cauliflowers, beets, melons, etc., which are brought them in attractive form by the gardener.

A writer in The Country Gentleman gives a good hint in this connection. He says:—It sometimes appears to me that farmers and gardeners show less ingenuity in developing new lines of work than do men in other occupations. It is not only that there are new crops to try, but new methods of handling and selling the old, to the end that they may bring a better profit. As a gardener, growing hot-bed plants for my own use, I have found that a considerable local trade could be established in them without much effort. I found also that the average village gardener, especially if he was an amateur, had little knowledge as to what he wanted in this line, and some farmers were not much better posted Most of them were inclined to confine their purchases to cabbage and tomato plants, not seeming to understand that to make a complete garden there was quite as much need of pepper and celery, and cauliflower and sweet potato plants, as of the others. When I would call their attention to the wider variety, with a few words of explanation as to the time and method of planting, they were usually glad to act upon my suggestion that these be added to their list. So that many who would ordinarily have been my patrons to the extent of a few shillings at the most, became buyers for from one to five dollars' worth of plants, and I am glad to believe that the value of their gardens was increased in like ratio.

In any village or suburban community, there is a chance for the building up of a little business in this line, which, while not reaching any great amount, will represent more clear profit than most other occupations of the soil. The time employed in making and attending to the hot beds will be largely in that season of the year when one cannot yet work in the open ground. The capital

required is almost nothing. A very small plot of ground, a little lumber for making the beds, waterproof cloth and straw mats, if glass cannot be afforded, and a small outlay for manure and for seeds, and you have it all. Ten dollars will easily furnish the equipment for hot-beds which will supply more than a hundred dollars' worth of plants. It should be borne in mind that a second crop can be grown here as well as in the garden; for as soon as the lettuce and cabbage and other early plants are off, the same beds should be utilized for celery and sweet potatoes.

If one undertakes this branch of gardening, he should employ some business talent in disposing of the product. It is well to make a canvass early in the season, and secure as many advance orders as possible, as many people will buy if the matter is brought to their notice who would not think of it if left to themselves. Then when the plants are ready, and the weather and soil propitious for setting them out, draw quantities of them from the beds and place them at the grocer's for sale (well bedded in fresh rich earth), or fill a light wagon with them, and make a house-to-house canvas.

ONIONS IN 1893.

E have frequently referred in these columns to the success attained with the Prizetaker onion by Mr. T. Greiner, a horticultural writer and experimenter, just across the border of Niagara Falls. This gentleman frequently attends the meetings of our Association, and some of us, having tried his method of cultivating onions with fair success, will be interested in his experience this season. He is more than ever convinced that the Prizetaker is the most profitable variety. He says in the Country Gentleman: If I want to make sure of a good crop of onions, I will plant the Prizetaker, growing seedlings under glass, and transplanting to open ground in April. Onions just at present are cheap, being quoted at only $1,25 to $1.75 per barrel by the Buffalo commission houses; yet I sold all the Prizetakers I had in early fall at from $1 to $1.25 per bushel at Niagara Falls, and could have sold many wagon-loads more at that price if I had only had them.

The expense connected with growing the seedlings is the only bugbear yet operating against a more general adoption of the plan known as "The New Onion Culture." By sowing seed in rows in hotbeds or on greenhouse benches, I have usually calculated on from 300 to 400 plants per square foot or bed. Once I raised 8,000 plants from one ounce of seed under one hotbed sash 3 by 5 feet, or over 500 plants per square foot. Usnally, however, I do not get more than half that number. But as I start the plants now in greenhouse, and like

to get them out in cold frame in March to harden, and also to get them out of the way when lettuce and radishes and tomato plants need the room, I grow the onion plants in flats filled with clear sand. My boxes are about 19 inches long, 10 inches wide and five inches deep. I scatter from one-sixth to a quarter ounce of seed evenly over the top, cover with an inch or half an inch of clear sand, and treat in the ordinary way. Such a box should give 800, and perhaps even 1,000 good plants, and the area covered by an ordinary hotbed sash, therefore, might be made to produce 10,000 plants. I have gradually been learning to set my plants closer in the rows. At first I planted four inches apart, with rows 12 inches apart. While the distance for the rows seems to be just right, I have reduced that between the plants to 2½ or 3 inches. Even now I sometimes question whether 2½ should not be the outside limit for greatest yields.

My failure with Yellow Danvers, etc., left me with a quantity of bulbs of hickory to walnut size on hand. They are too large for pickling, and too small for sale. A suggestion found in a recent number of Gleanings pointed out to me a method of utilizing them. I had my boy pick up these small onions from the barn floor, carry them to the greenhouse, and plant them rather close together (so they almost touch in the row, with rows about one inch apart) under the benches in a bed of rich soil. I intend to market them for bunching (green) onions later on.

APPLE AND TAPIOCA PUDDING.—One cupful of tapioca soaked in two cupfuls of cold water over night. In the morning, butter a pudding dish and fill two thirds full of quartered tart apples. Add to the soaked tapioca one cupful of sugar, one beaten egg, and a little cinnamon or nutmeg. Pour over the apples, cover and bake two hours. Serve with liquid sauce, made of one egg, one cupful of sugar, and one-half cupful of butter, beaten together and boiled until thick with one small cupful of hot water. Flavor with lemon.

APPLE JELLY.—Core and quarter Astrachan apples, removing bruised or discolored spots, but leaving the skins on in order to give a richer coloring. Cook slowly until tender, with water to nearly cover, being careful not to let them scorch. Place in a jelly bag and allow them to drain over night. In the morning, measure the juice and put over the fire to boil. Allow a pound of sugar to each pound of juice. Place the sugar in shallow pans in the oven and let it remain until the juice has boiled twenty minutes. Then stir the sugar, which should be very hot, into the boiling juice until thoroughly dissolved. Let it just come to a boil and take from the fire. Have the jelly glasses and bowls rolled in hot water, and fill with the scalding juice, which will at once begin to form. When thoroughly cold, cover the glasses with paper dipped in beaten white of an egg, then with a thicker paper pasted over. Label carefully. If the directions are carefully followed, the jelly will turn out translucent, crimson and firm, a delight to both eye and palate.

❋ The Apiary ❋

THE TWENTY-FOURTH ANNUAL MEETING OF THE NORTH AMERICAN BEE-KEEPER'S ASSOCIATION.

(*Continued from December Number.*)

THE question of races of bees came up for discussion. Years ago bees were brought to America from Cyprus, also the Holy Land and Syria. It was thought that whilst some of the other bees had good qualities, none were equal to the Italian bees. The Entomologist of the the United States Government at Washington, hinted that it was the intention of the Government, at the close of the World's Fair, to send some one in quest of new races of bees, and do work for the bee-keepers of the United States, along this line. Doctor Riley the Entomologist, also stated that the Government had not yet given up hopes of mating queens not on the wing, thus selecting the drones which were to mate with the queens.

In reply to a question "*re* the best method to adopt when being stung?" Doctor Miller said, keep at it. It is of course, well known, that the inconvenience and swelling which is occasioned from a sting to the novice wears away in time. To those keeping only a few colonies, advice given by others may be of use. One recommended Cuticura, another recommended strongly heating the parts either by holding in very hot water or by bathing the part. Some also use ammonia.

On Tuesday morning R. F. Holterman gave an address upon

"The Production of Comb Honey."

The production of a first-class article of comb honey becomes a subject of greater importance from year to year. The demand for comb honey is increasing, and those producing the article in the best condition will secure the best prices and readiest sales. There is no treating the subject except in detail.

There are a number of points to be considered: First of all, is the man fitted; for no man who is not thorough in his work, neat, intelligent, paying attention to detail, can succeed to the fullest extent. It is then a subject worthy of the attention of a man or woman of first-class ability. The locality must be considered, one in a locality generally poor, cannot expect to compete in the production of comb honey, with a bee-keeper in a good locality; by that I mean heavy flows are required rather than prolonged. The greater number of pounds of honey gathered in the least time, the better the production of comb honey. Upon this we are all agreed.

THE HIVE.

Upon this subject I hardly consider it wise to more than touch. There is such a diversity of opinion, everyone must judge for himself according to conditions. At the same time I cannot treat the subject honestly and conscientiously, without stating that I consider any material variation from the depth of the Langstroth frame a mistake.

THE SUPER.

There is perhaps no super that will give us all advantages and no disadvantages. We must then select the one which has the greatest number of advantages and the least number of disadvantages. I should like the super that would protect the four sides of the sections, also its edges as far as possible, but when we consider the difficulty, in fact, impossibility, of getting at sections, the conclusion is forced upon us, that something else must be looked for. The section supers, with section holders consisting of two sides and a bottom bar with separators, followers and wedge, is probably the super we are looking for, as it is not covered by patent, and everyone is at liberty to make and use it. The sections are protected as far as convenience in handling permits.

SIZE OF SECTION.

The size of section must be the next consideration. In this, we must keep in view convenience, demands of the market, and what the supply dealer makes. When we do this but few will fail to take the 4¼x4¼ section. To decide upon the width is a more difficult matter. In Canada, ninety-five out of every hundred use the 1 5/8 section, a few use seven to the foot, the balance 1⅜, 1¾, 1½, 1⅞ and 2 inches. The demand is for the thinner section, 1⅝ or seven to the foot. In the United States I am safe in saying, the demand is increasing for a thinner section, something more in the direction of what Canadians are using, and that demand will be met.

BEES.

Next comes the bees. Upon this it is my intention here to touch very briefly, as the subject comes up again under "General Management." Just let me say, beauty of comb produced, honey gathering qualities, and the like, must be looked to before beauty of bee. I believe many of our queen breeders are bowing too much to popular opinion in the breeding of queens. They know a beautiful queen and beautiful bees will please as soon as the eyes rests upon them. We are apt to be carried away with them the moment we open the cage, while it takes time to manifest other and more practical characteristics.

MANAGEMENT.

And now comes management. The bees should have plenty of stores in

the fall of the year, they must be wintered well, and every hive should have plenty of stores so the bees in the spring need never curtail brood rearing on account of shortage of stores. All that applies to the building up of colonies in the spring applies to the successful production of comb honey.

I take issue with the statement that bees can get strong too early ; such a condition never was and never will be ; the opposite, too weak colonies at the honey flow, alas ! is too nearly the rule, and reduces the number of pounds of honey we get per colony. If a colony gets crowded in the lower story, and the time has not arrived when sections should be put on, I place an extracting super with a queen excluder (or without, as I see fit), and at the proper time replace this with comb honey supers. With extracting supers on the hive there is, at this season, practically no excuse for swarming. All hives should be placed on secure stands and in every case a spirit level used. There is no serious objection to the hive leaning forward a trifle, sufficient to shed rain, but sideways they must be perfectly level. The greatest cleanliness should be observed, bottom boards, hives and top bars scraped and only such old stock as have bright, clean combs, run for comb honey. Full sheets of foundation should be used in the right sections and the foundation as light as possible and of the best wax. I prefer wax made from cappings and taken by the solar wax extractor for this purpose, but in this matter the supply dealer is at the mercy of the bee-keeper and it rests with the latter what kind of wax shall be used. When I make the statement that light foundation should be used I am at variance with some leading comb honey men, but while it is a fact, that the bees will thin down the foundation, there are seasons and times when they will not do this, and against this we must guard in order to avoid making the article unpopular. I used a bait (one of last year's sections) in the supers. I have also tried supers without but can find no great difference. Swarming is an important factor in the production of comb honey, and the longer one works for this the more confident one must feel that no one who wishes to make comb honey to perfection will ever care for any device to prevent swarming entirely.

(To be continued.)

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

To Grow the Big Squash.—Mr. Warnock writes that the hills should be fourteen inches deep, instead of six inches, as described in volume XVI., page 423.

The Committee on New Fruits for 1894, consist of Messrs. A. McD. Allen, Leslie; D. W. Beadle, 450 Markham Street, Toronto; and Mr. John Craig, Horticulturist of the Central Experimental Farm, Ottawa. These gentlemen are all experts, and are not easily puzzled in identifying varieties. It will not be easy for any nurseryman to impose old fruits on them as new kinds.

The Idaho Pear was shown by the State of Idaho in quantity. In the opinion of one the jurors, it is identical with the Sheldon, but grown in Idaho it is enlarged beyond recognition. Query? Would the texture of the flesh be also altered by the change of climate, for the flesh of the Sheldon is finer grained than the Idaho. Has anyone fruited this pear in Ontario?

More frequent Communications from the readers of this journal are invited. We desire to make this journal a record of experience in fruit culture and floriculture, representing all parts of Ontario, and as far as possible, the other provinces also. We have a large number of readers in Nova Scotia and British Columbia, and notes of their work will be acceptable as well as of work in our own province, and thus our journal will be indeed, what its name imports, the Canadian Horticulturist.

Revision of Assessment Act.—Messrs. Beadle, Wellington, and Allan, were appointed a committee to confer with the Minister of Agriculture, regard-

ing the discouragement to the fruit industry under the present Act, because orchard land is taxed so much higher than farm land. This seems unfair, in view of the many fruit failures, and the long years before an orchard begins to yield any returns.

OUR PROVINCE is not behind Nova Scotia in her provisions for teaching horticulture, for the Agricultural College at Guelph, has always given more or less attention to the study of that art, and at the beginning of the present College year the Minister of Agriculture has added to the teaching staff a Professor of Horticulture, in the person of Mr. H. L. Hutt, a graduate of the College, who is a native of the Niagara District.

SOME PRIVATE EXHIBITS of great value were made by fruit growers in the Province of Quebec, in addition to the display made by the Province itself, viz.: R. Brodie, Montreal; Wm. Craig & Son, Abbotsford, P. Q.; J. J. Gibb, Como; George Copeland, Thelford; W. Johnston, Granby; Abbotsford Fruit Grower's Association; Missisquoi Horticultural Society; George B. Edwards, Covey Hill, Que. For such details our readers are referred to the official list, not yet published.

NOVA SCOTIA FRUIT GROWERS have established a Horticultural School in connection with Acadia College. A grant of $50 per scholar has been made by the N. S. Legislature, for the support of the work, The Association has secured the services of Prof. E. E. Faville, graduate of Ames Horticultural School, Iowa, and the course is to last during six months of each year. Fruit growers generally are invited to take advantage of this course of training in scientific horticulture.

MANY ENCOURAGING WORDS have come to hand from our subscribers. In response we beg their assistance in making this journal what it should be, the leading journal of its class in America. We shall be glad of illustrations of trees, plants, fruits, flowers, lawns, gardens, etc., either drawn with pencil or photographed, especially when accompanied by descriptions. We will have them engraved in due time, and they will add very much to the attractiveness of our pages. We hope that our volume for 1894 will be of more practical value than any preceding one.

THE BRITISH COLUMBIA FRUIT EXHIBIT at the World's Fair, contained samples from many different sections of that Province, proving beyond doubt its capabilities for fruit growing. Mr. A. Clemes, Spence's Bridge, sent us sixteen varieties of apples and four of plums; Mr. Thomas Sharpe, of the Experimental Farm at Agassiz, sent on fifteen varieties of plums, and twenty-two of apples, a fine collection, which in the table, page 404, Journal for 1893, is

classed in British Columbia column. The plums were exceedingly fine, indeed there were none finer shown by any exhibitor, and it was quite disappointing to see them so soon begin to decay. A medal was awarded British Columbia for her plums, and one for her apples. Mr. Hutcherson, who collected fruit for the Provincial exhibit, sent on nine varieties of plums, and ten varieties of apples, besides a large collection of varieties from orchards in various parts of British Columbia, whose names appeared with their their exhibits. These will all appear in the official list to be printed and distributed by the Dominion.

———

LOCAL HORTICULTURAL SOCIETIES may be formed this month in incorporated towns and villages, under the provisions of the Agricultural and Arts Act. Ordinarily the object is to hold an annual exhibition, but in this case only a few reap the benefit. An excellent plan to make them more popular, and of equal benefit to all concerned, is to take advantage of those provisions of the Act which permit the use of the funds in the distribution of horticultural literature, and the securing of lectures on the same topic. By affiliating with the Fruit Grower's Association (see by-laws 61-23, annual report), every member will receive our journal and report, and the Society will have abundant funds for the securing of lectures, distributing choice roses and other flowers, and for securing the services of able lecturers. Several societies have been formed on this plan, and it has in some cases been found necessary to limit the subscription list, so anxious are those interested, to unite. A circular of explanation may be had on application to this office.

———

SUCCESSFUL SPRAYING.—Every season careful experiments are conducted at Maplehurst, by the editor of this journal, in spraying for the various insect and diseases of our fruit trees. This season, in his absence, the foreman applied the various mixtures as usual, and reports that owing to frequent rains the Paris green was not as effective as usual in destroying the codling moth. The apple crop, therefore, was much injured by this insect.

Better success, however, attended the use of the Bordeaux mixture for apple and pear scab. Some trees of the Fameuse orchard were treated three times, once before blossoming, once after, and once two weeks later, at intervals of about two weeks. The fruit on these trees was quite marketable, being fairly clean, while those not treated were worthless, being covered with scab.

A Bartlett pear orchard, which is more subject to scab than those situated on other parts of our fruit farm, was beginning to show their fungus very badly on the young fruit in June; the Bordeaux mixture was at once faithfully applied, and the result was to completely avert the progress of the scab, and the fruit, though showing marks of the scab, attained full growth, and was quite marketable, while those untreated were small, scabby and worthless.

Will not our commercial orchardists give these mixtures more careful trial, etc., during the coming season, and report to this journal for publication?

Question Drawer.

Grafting Broken Trees.

594. Sir,—On the 15th of December we had a heavy rain from the east which froze as it fell, and continued all night. The sight which met our gaze the next morning was enough to sicken a lover of trees; trunks and limbs bent, broken, split and torn; hardwood, softwood, evengreen, all shared the same; fruit, shade, ornamental, forest trees; scarcely any are spared. Large numbers are split and broken to the ground, altogether the worst damage from an ice-storm we have ever experienced. It will be many years before the damage is repaired. I have thought that the best plan to take with the frui trees whose tops are broken beyond repair, would be to saw off the trunks below the break and graft them. Would that not be the quickest way to replace the trees?

George Wood, *Monticello, Ont.*

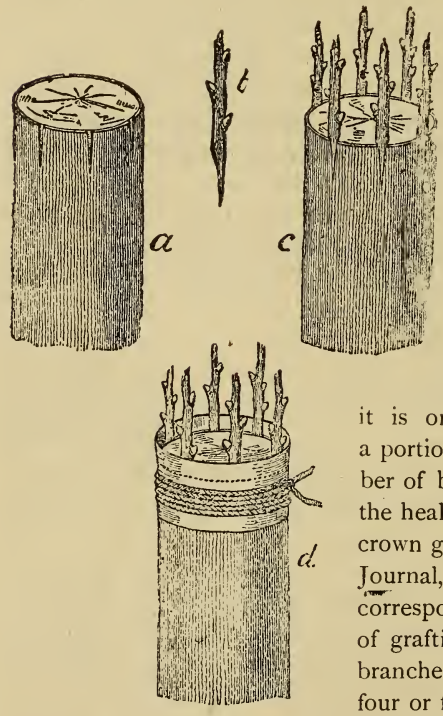


Fig. 415.

The plan proposed by our correspondent might succeed in the case of comparatively young trees, where the balance between root and top is not too much disturbed; but the removal of the whole top at once is usually fatal, or at least so stunts the growth that it never recovers. The shock is of course worse if done in summer, but, even if done when dormant, the young shoots and grafts will hardly produce sufficient leaves to keep the trees alive. When grafting old trees, it is on this account usual to renew only a portion of the tree each year, leaving a number of branches with heavy foliage to continue the health of the tree. Probably the method of crown grafting, illustrated some time ago in our Journal, would serve in many cases such as our correspondent describes. To perform this mode of grafting, the main trunk and large upright branches are sawed off smoothly, the ends of four or five scions are beveled on one side and inserted under the bark, and the cut sections are then wrapped in paper. The wounds are well pressed with clay or grafting wax, and the cap-like cavity formed by the paper wraps serves to hold the clay in place. This is a simple method, requiring few tools, and as likely to succeed as the more scientific method of cleft-grafting. The latter is, of course, the only proper method of dealing with smaller limbs.

Hollyhocks as Shelter Plants for the Apiary.

595. SIR,—I have hollyhocks planted on the west side of my bee hives, for the purpose of keeping off the hot sun in summer. The leaves have become affected with rusty spots and have dropped off. Can you explain? And what could I plant in their place which would answer the same purpose?

A SUBSCRIBER.

Reply by Prof. John Craig.

Hollyhocks are frequently and seriously affected with a disease classed among the "rusts" and scientifically known as *Puccinea Malvacearum.* This appears on the leaves of the hollyhocks and closely allied plants, causing brownish rusty patches. This disease has been introduced from Europe and seems to be spreading quite rapidly. Some successful results in treating it have been reported, where Bordeaux mixture was used as a spray.

Wherever plants are seriously affected, it will probably be best to root them up and destroy them. As a substitute for the hollyhock, I would suggest some of the tall growing double forms of the sunflower family. We have now many double varieties of *Helianthus*, which are very desirable for positions where they serve the purpose of a screen or a back ground, and I do not think of any other plant at the present time which would fill the position so well. One of the most desirable forms of the helianthus is that known as the Californian Double Sunflower.

Strawberries for Home Use.

596. SIR,—What two or three kinds of strawberries would you prefer to plant in the garden for family use?

J. DELGARMO, *Marmion.*

There is so much difference in taste that this question is not easy to answer satisfactorily to all concerned. We know some who prefer the sharp acid of the old Wilson to the milder flavors of other berries. We would recommend a trial of Downing, Cumberland, Sharpless, Saunders. Would our correspondent be kind enough to give the results of his experiment.

Grapes for Home Use.

597. SIR,—Please give me a list of grapes suitable for planting in the neighborhood of Owen Sound, for home use.

JOHN DELGARMO, *Marmion.*

The varieties most popular for home use or market are frequently changed, owing to the introduction of new kinds. We would recommend our correspondent to try for his section the Early Victor, Worden, Lady, Agawam, Diamond and Brighton.

Open Letters.

Spraying for Pear Scab.

Sir,—At the late annual meeting of the Fruit Growers' Association of Ontario, at Peterboro', the question of spraying apple trees for the Codling Moth and plum trees for the Plum Curculio, came up for discussion. During the meeting, which I had the pleasure of attending, those present who had sprayed with Paris green as a remedy against these insects were requested to give the results of their experience. and some convincing instances were given, proving the efficacy of this method of fighting these two pests.

The following day, however, I am informed, there was some evidence brought forward, which was of an adverse nature. As I have tested this remedy and advocated its use for several years, I shall be very much obliged if any readers of the Canadian Horticulturist, who have failed to obtain paying results from spraying plum or apple trees, will write to me upon the subject. My only object in this matter is to arrive at the truth, as to whether the practice pays or not. I shall be glad also, at the same time, to receive opinions from fruit growers as to the greater susceptibility to injury of certain varieties of plums and apples. It may be well perhaps to mention here that I shall be at all times pleased to answer enquiries concerning insects injurious to crops, and that letters and parcels can be sent to me free of postage.

J. Fletcher.

Central Experimental Farm, Ottawa.

Our Markets.

THE APPLE MARKET.

Probably there has never been a greater boom in the apple market than the present one. The great scarcity of apples both in Canada and the United States is now being fully realized, and prices are steadly advancing, with occasional fluctnations. On the 6th of December, a circular from Liverpool stated that the slight increase in arrivals was from Canada, and it was probable that the English market would be dependent upon that source for supplies. The circular also stated that the quantity arriving was altogether insuffieient for the demand, and that the market closed at an advance of 3/ to 4/ per barrel. Canadian Baldwins were quoted as high as $7.18 ; Ribstons, $8.28 ; Kings $9.25. Nova Scotia Baldwins, which come next in value to those from Ontario, reached $6.21 and the Kings $7.43.

On the 9th of December, a circular from another large wholesale house in Liverpool, farther emphasized the keen demand for all descriptions of apples, and called attention to the satisfactory returns which had been made to the Canadian shippers, Baldwins and Greenings reaching $6.82 ; Kings $7.91 ; adding that it was a matter of surprise to see the price received for Greenings, the explanation being that this variety is particularly favored at this season of the year, by people who at other times would scarcely look at them. Nova Scotia Baldwins sold at $6.36 ; and Kings $6.21.

A New York circular of the 18th of December quoted Kings at $3.50 to $4 50 ; Snows $3 to $4 ; Spys $4 ; Baldwins and Greenings $3 to $4.

On the 16th of December, a circular from Liverpool states that the principal supplies of apples received in that market were from Canada, and that the prices were practically unchanged. Baldwins made $7.06 ; Greenings $6.94, and Kings $9.37. These latter were usually plentiful on that date, and showed a slight falling off in value. Nova Scotia Kings reached $7.43. Some Newton Pippins were sold as high as $9.98 per barrel.

A cable on the 22nd of December, stated that the market was depressed in consequence of the holidays. The highest quotations for Baldwins was $6.09 ; Greenings $5.60 ; Kings $6.82.

An article in the Trade Bulletin, Montreal, under the same date was headed "The Apple Trade Booming," and called attention to the high prices of apples on both sides of the Atlantic ; some sales in England has netted shippers in Western Ontario $4.82 per barrel, and at the Montreal auction rooms, a straight car of choice Spys $4.10, and even seconds brought from $2.50 to $3.16.

Those who have been favored with even a small crop of first class apples are very fortunate, but no one should be very confident regarding the future of apple growing on this account, for the market for this fruit is a very fluctuating one Growers must expect that there will be an occasional season in the near future when the apple crop is a very abundant one, and prices so low as to scarcely repay them for the trouble of harvesting. On the whole, Canadian fruit growers are the best situated of any in the world to make money out of the business because the clear quality of Canadian stock is so highly appreciated, both in the English and American markets. Notwithstanding this, however, it must not be supposed that apple growing, or any other line of fruit culture, will always prove a mine of wealth, for there are many discouragements, and many seasons of failure and disappointment. This season is one of the hardest to bear, because the prices are high and many growers have so little to sell.

Our Book Table.

BOOKS.

THE A B C OF POTATO CULTURE. T. B. Terry, Hudson, Ohio. Published by A. I. Root, Medina, O. A cheap and valuable treatise.

THE O. A. C. REVIEW, Guelph. The Christmas number is very creditable. It contains a photogravure of the College, of the Minister of Agriculture, of the President, of the Botanical Laboratory, and of many of the young men. Besides this, it contains much interesting reading matter.

THE CHRISTMAS NUMBER of the Montreal *Star* is one of the best productions of its kind ; the reading matter is excellent—the supplementary art pictures are charming, and worth framing, and the portfolio of Canadian Wild Flowers is superb The *Star* almanac is also indispensable in an office, for it contains such a wealth of information. The publishers are Messrs. Graham & Co., Montreal.

WISCONSIN FARKECS' INSTITUTES of '1893, forms a fine volume of 256 pages. The book contains the cream of the information given at the Farmers' Institutes of the State of Wisconsin, arranged in systematic order. It is edited by Mr. W. H. Morrison, Madison, Wisconsin, the Superintendent.

ANNUAL REPORT OF THE BUREAU OF INDUSTRIES for the Province of Ontario, 1892. Part VI.—Labor organizations, strikes and lock-outs. Toronto, 1893.

REPORT OF THE IOWA STATE HORTICULTURAL SOCIETY for the year 1892, containing proceedings of the Annual Meeting, and the transactions of the affiliated Horticultural Societies in the State. Edited by the Secretary, J. L. Budd, Ames, Iowa.

CATALOGUES.

THE COLUMBIAN GRAPE CO., Kingston, Ohio —Columbian Grape a specialty.

A. M. SMITH'S ANNUAL CATALOGUE FOR 1894.—Fruit and Ornamental trees, plants and vines. Dominion Nurseries, St. Catharines, Ont.

Is Different from Others

It is intended to aid the planter in selecting the Seeds best adapted for his needs and conditions and in getting from them the best possible results It is not, therefore, highly colored in either sense ; and we have taken great care that nothing worthless be put in, or nothing worthy be left out. We invite trial of our Seeds. We know them because we grow them. Every planter of Vegetables or Flowers ought to know about our three warrants; our cash discounts; and our gift of agricultural papers to purchasers of our Seeds. All of these are explained in the Catalogue, a copy of which can be yours for the asking.

J. J. H. GREGORY & SON, Marblehead, Mass.

Winter.

WHEN Winter comes earth seeks repose,
And lest she feel the chilling storm,
God covers her with virgin snows,
And tucks them in to keep her warm.

That nothing may her rest disturb,
And hushed be cataract and rill,
God puts within her mouth his curb
Of mighty frost, and holds them still.

Yet all abroad, roused from their calm,
The unchained winds may sweep the sky,
God weaves their notes into a psalm,
And bids them be earth's lullaby.

She sleeps her weariness away,
And when the hours their signal ring
God marks unerringly the day,
And wakes her with the kiss of spring.

—D. M. Welton, *in McMaster Monthly.*

MRS. JOHN LAING.

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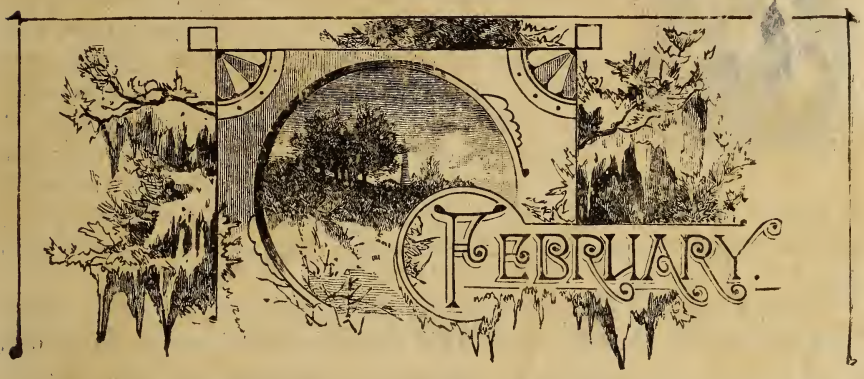


MRS. JOHN LAING ROSE.

EARLY eleven hundred varieties of roses are counted worthy of a place in the list given by H. B. Ellwanger in his book on the rose. How widely this favorite flower has been idolized by those who appreciate flowers, and yet how many in our province know almost nothing of the many beautiful varieties which are within their reach. A rose to them is "only a rose"; and the many charming characteristics which distinguish one from another, are to such persons a sealed book.

Among the hybrid remontants of recent origin, the Mrs. John Laing is one of the most desirable. It originated with Mr. Henry Bennett, of England, a noted rose grower, in the year 1887. This rose is a seedling from Francois Michelon. It is valuable for forcing, and yet succeeds admirably in the open ground, being a vigorous grower and flowering almost continuously. The flower is soft pink in color; very large, and very fragrant.

Mr. W. Taplin, speaking of early-blooming hybrid perpetuals, says: "Among the earlier hybrids Mrs. John Laing and Madame Gabriel Luizet take a prominent place, these being among the most beautiful of pink roses, and both are readily forced."

PROFITS OF SPRAYING APPLE ORCHARDS.

R. E. S. LODEMAN, of Cornell University, has issued a bulletin on "The Profits of Spraying Apple Orchards," in which he shows the results of actual experiments in spraying. Some of his points are most evident, *e. g.*, that in wet seasons spraying needs to be repeated more frequently than in dry seasons, and that some varieties, notably the Fall Pippin, which is badly subject to the scab, may be sprayed with profit more frequently than varieties like Duchess and Baldwin, which are usually clean. These latter varieties he found it profitable to give only one application, while the former kind received from four to six. Evidently common sense is as useful in spraying as in other things.

Of the fungicides used, the Bordeaux mixture proved the very best; indeed, so evident was this, that the superiority of fruits sprayed with it could be detected at sight by their very appearance. The action on the leaves was plainly discernible, for the Bordeaux mixture protected the foliage so perfectly that scarcely a diseased leaf could be found. In the case of the Fall Pippin, the foliage of which is particularly subject to fusicladium, the difference in the foliage on the trees sprayed and unsprayed was very easily discernible.

FIG. 416.—APPLES SPRAYED AND UNSPRAYED.

In some cases the size of the apples was perceptibly increased, and, in his opinion, the color was also heightened. As an example of the experiments from which the conclusions were drawn, we mention the following one: A tree of Maiden Blush was selected and one half was sprayed and the other half left untreated. When harvested one hundred apples unsprayed weighed 24½ lbs., while an equal number similarly chosen from the other half of the tree weighed 37¾ lbs., a gain of over 54 per cent. This difference was forcibly shown in another way; in fact, so plainly and conclusively did it show the value of spraying apples susceptible to the attack of the scab, that it alone would convince

the most sceptic that the operation is a paying one. One hundred unsprayed apples filled a half-bushel basket evenly full, as shown in the accompanying illustration, and one hundred of the average sprayed apples filled a half-bushel basket twice. Thus the bulk of the crop of the Maiden Blush was practically doubled.

Mr. Lodeman further affirms that the keeping qualities of apples were also improved by spraying. He experimented with some Fall Pippins and Maiden Blush, from both the sprayed and unsprayed portions of the tree, gathering them about the 20th of September, and storing them in a cool, dry cellar. On the 15th of October the unsprayed apples began to show signs of shrivelling, and on the 18th of November they were much shrivelled, and some decayed, while the sprayed apples were still plump and fit for market.

With regard to the use of Paris green for the codling moth, Mr. Lodeman's experiments went to show that many varieties of apple trees were susceptible to injury from too frequent applications of this poison, and that one or two applications were as many as the average tree would bear without injury, unless the strength of the poison was somewhat counteracted by the use of a considerable quantity of lime.

Some experiments were also made with fungicides upon the foliage of the peach, and of all the preparations that were applied, the Bordeaux mixture least of all affected the foliage injuriously.

A BALANCED WHEELBARROW.

The wheelbarrow plays no small part in the making and the after care of the ordinary garden, but it has its limitations and its disadvantages, one of the latter being the severe strain upon the muscles when wheeling a full load, since the person between the handles must lift from a quarter to a third of the whole load in addition to propelling the whole. A barrow having two wheels is shown in the illustration, engraved after a sketch by Webb Donnell, on which the load may be almost perfectly balanced, leaving the one using it little more to do than to move it forward. It has removable end boards at either end, and can be dumped from the rear. The drop axle here figured may be used, or small wheels with the end of the axle bent in exactly the opposite direction. The wheels may be of a width to run on each side of a garden row.—American Agriculturist.

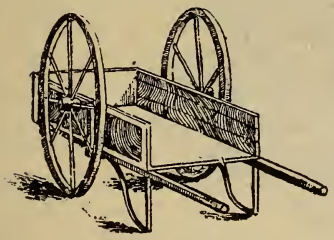


FIG. 417.—TWO-WHEELED GARDEN BARROW.

BLACK RASPBERRIES AS A FARM MARKET CROP.

IN a recent bulletin from the Cornell Experiment Station, there is a very interesting discussion of the subject of growing black raspberries on farms where they may readily be evaporated, and the product sold at a fair price. The author, Mr. Fred. Card, refers to some important points in connection with the work, as follows:

Berry Harvester.—The advent of the berry harvester makes it possible to conduct berry farming in remote locations. Without this implement, the evaporator is just as dependent on location as the grower who sells fresh fruit, for it is only in the vicinity of towns of considerable size that pickers can be secured in sufficient numbers to make a safe business in small-fruit growing.

Varieties.—The variety chiefly grown for evaporating purposes throughout the great evaporating sections of Central and Western New York is the Ohio, yet it is by no means certain that this is the best. With a few of our best growers, the Gregg is coming to supplant the Ohio, and where it proves to be hardy, it is a more desirable variety to grow, especially if picking by hand is practiced, for

FIG. 418.—BERRY HARVESTER.

the large, firm berries are much preferred by pickers. They adhere to the bushes more firmly than most other varieties, and some growers do not find it satisfactory to gather them with the harvester; others, however, do gather them successfully in that way. The variety does not prove so universally hardy and satisfactory as the Ohio.

Harvesting.—The means of gathering the crop is one of the most important considerations in growing small fruits, and, as before intimated, upon the success of the berry harvester depends the adaptability of raspberries as a farm crop. This harvester is a very simple affair (see Fig. 418) consisting of a canvas tray some three feet square, there being only enough wood about it to form a frame-work and enable it to be moved about.

Under the corner which rests on the ground, there is a sort of a shoe of wood, enabling it to be slid along from bush to bush easily. In one hand the operator carries a large wire hook, with which the bushes are drawn over the canvas, or lifted up if too low down and in the way. In the other hand is a bat resembling a lawn tennis racquet, with which he knocks off the ripe berries. This is merely a canvas-covered loop of heavy wire fastened in a convenient handle. In place of this, some use a wooden paddle, but this probably bruises the berries unnecessarily. In gathering by this method, the berries are allowed to become pretty ripe, and the plantation is gone over but two or three times in a season. Many dry leaves, some stems and a few green berries are knocked off with the fruit, but the leaves are no disadvantage, for they help to absorb moisture before and after drying, and may aid in preventing mold if the fruit has to stand some time before going to the evaporator. The leaves are quickly taken out by running the fruit through a fanning mill after it is dried. Some growers fan them out before drying, but this has the disadvantage of bruising and crushing more berries. The berries are usually allowed to stand in the field in boxes for a time after gathering, and any insects, which may have fallen in will usually crawl out and disappear.

Growers who have had much experience say that a man will average eight to ten bushels a day with the harvester, although much more can be gathered in the best picking. On one farm visited last year, two men and two girls had gathered thirty-one bushels the day previous in ordinary picking, and one of the men had been in the field only part of the time. This shows the first cost of gathering to be less than half a cent per quart. Running them through the fanning mill costs but a trifle; then before marketing they are picked over by hand to remove stems, green berries and other litter. This does not cost over one cent a pound, and is sometimes paid for by the pound at that rate, so that the whole cost may be placed at one cent a quart, as against two cents usually paid for hand-picking. Growers who have had experience with both methods seem to be united in the opinion that harvesting yields a better quality of dried fruit than hand-picking, for the reason that, if picked by hand, they cannot afford to look them over again after drying, and so they do not go to market in as clean and nice condition as those which come from the harvester.

Some extensive and general fruit growers find it inconvenient to attend to the matter of looking over the dried product at the same time that other fruits, which follow on after the raspberries, are claiming their attention, and for that

reason prefer to pick a large part of the crop by hand and market it fresh, if they can find pickers conveniently. In that case, they find the harvester a great convenience to finish up the last of the crop. Every grower knows how much dissatisfaction and unpleasantness arise in keeping the pickers at their work after the berries begin to get thin. With the harvester, the late berries can all be finished up at one time with a great deal of satisfaction to all concerned. This plan is equally available for those who sell their fruit fresh. The last of the crop can be gathered and dried, thus proving a relief to the market and the patience of the grower and pickers. This plan of harvesting was invented and introduced by Mr. Benedict, of Dundee, N. Y., and is extensively used by berry growers of that region.

LANDSCAPE ART.

The man who has painted a good landscape has only done so after years of patient labor and perpetual consideration of the proportion and balance of parts of all the materials he works with, and his instinct as to shape, size and position of the various objects he has introduced is so sure, that the changing of one of them would probably result in the deterioration of the whole. Each has reasons for its place, size and form, reasons which, may be, would come under no formula, but are, nevertheless, entirely potent. A hand placed over some seemingly unimportant feature will often overbalance the whole and teach more of subordination of parts than pages of explanation. Careful study of the foliage tints in half a dozen good pictures will be a better lesson in planting for effect than the conning of all the catalogues of striking novelties ever published; it would be valuable did it only teach the mistake of planting trees in proximity for the sake of the contrast of their tints—a mistake too common in these days of perpetual new introductions of high-colored and variegated trees and shrubs. All these points, patiently and conscientiously considered, will develop in the outdoor artist the feeling of due proportion of parts in his own composition; and he will come to have as sure a perception of fitness in their size, form and relative position as the painter, since his work is founded on principles closely related and no less artistic.—Garden and Forest.

BAKED APPLE DUMPLINGS.—Peel and core eight tart, juicy apples, filling the cavity left by the core with sugar and a pinch of cinnamon or cloves. Make a soft crust as for baking powder biscuit, roll into a sheet about one-quarter of an inch thick, cut in eight pieces, and cover each apple separately, pinching the edges of the crust together over the apple. Lay them side by side in a pudding dish, spread butter over them and nearly cover with boiling water. Cook moderately fast until nicely browned. Serve hot with sugar and cream.

MY EXPERIENCE IN 1893 IN SPRAYING, ETC.

THE past summer was one of the worst I can remember for all kinds of insect pests, including moth, curculio, green aphis, potato bugs, currant and cabbage worms, and as I had reason to believe that a great many were spraying the past season, I was waiting and watching for their experience; but to keep "mum" appears to have been the order of the day all along the line. Even at the Peterboro' meeting there appears to have been little said about spraying, and those who did give their experience did not agree as to its benefits. Mr. Geo. Cline has found spraying a benefit in growing plums. Maxwell Bros., of Geneva, N. Y., who have 80 acres of plum orchard do not spray for curculio. We have also the statement of Mr. Barry at last winter's meeting of the N. Y. Horticultural Society, that one of the benefits of the society was that they had proved that spraying was of no use for curculio. My own opinion is that there is yet a great deal of experimental work to be done which should be done at our experimental farms, where they have the time to give the work the proper attention.

My own experience the past season has not been very satisfactory. The sprayer I used was a Garfield Knapsack, costing about $15, with Vermorel nozzle, which does its work nicely. Any one growing half an acre of potatoes, and having 100 currant or gooseberry bushes should have one. A pail of liquid will go twice the distance, do the work twice as well and in half the time used in the old way with whisk, broom or watering can.

Well, I used dilute Bordeaux mixture, and sprayed pears and grape vines before leaves opened. After the blossoms fell I again sprayed with the same mixture, with two oz. of Paris green to twenty-five gals. of water added. I sprayed four pear trees, two cherry trees, ten plums, one apricot, one Prunus Simoni, and twenty grape vines. After plums were about the size of cherries or a little larger, I again sprayed thoroughly, trying to cover all the fruit. Now, I expected to see those trees grow and have luxuriant dark green foliage. Instead they appeared to stop growing, the leaves and fruit being a dirty white from the lime used. Then the plums were badly attacked with the green aphis, and I sprayed them with kerosene emulsion.

Results.—I had three pecks of plums where I should have had six or eight bushels, half of what I had were badly stung with curculio. The best plums were high up where I could scarcely reach them with the spray. The leaves withered and fell off my Abundance plum; it leaved out again a month later, but made no growth. My Prunus Simoni got sick, then very sick, and then died. My apricot, 1½ inches through, lingered a week longer, and decided to follow the Prunus Simoni. My Weaver plum, two inches in diameter, that had given such promise of a good crop, appeared to loose heart after the apricot was

gone, and soon fell asleep also, and late in the fall I cremated him with the others; peace to their ashes. The pears pulled through pretty well, with the exception of one dwarf that was handy to get at. I gave it a couple of extra doses; it quit growing and the fruit shrivelled. My Montmorency cherry did well, and by picking the cherries half ripe, I got about four quarts of fruit. The robins only got about one bushel. The English Morello did not do so well. It kept on growing, but the fruit, after the last spraying, ceased to grow, and dried up on the tree, and is there yet. I sprayed my English gooseberries, Industry and White Smiths, twice with ½ oz. liver of sulphur in a pail of water, and had no mildew. I used Paris green on currants and gooseberries for the worm with perfect success. It is better for the first spraying than hellebore, and much cheaper. Thus ends my first year's experience in spraying. I forgot to say that I had a good crop of grapes free from disease of any kind. I have learned some things; one of them being that Japan and native plums are as tender in the foliage as the peach, and must be sprayed, if at all, with very weak solutions. What spraying I will do next spring on pear, plum and cherry trees, I will do before leaves open.

St. Thomas. A. W. GRAHAM.

POSITION AND SOIL FOR ROSES.

THE first requisite in the culture of roses is the selection and preparation of a suitable place for planting. To begin with, choose the best place in the garden, a place where you can offer sufficient protection by means of hedges or board fences from bleak, sweeping winds. A warm sunny position is also requisite; if so situated that there is an exposure to the morning sun, and the hot rays during the afternoon are in part, or wholly shaded, all the better. Besides scattering them through our gardens, roses may be made very effective planted in borders about our lawns, either individually or in groups, and also planted in beds on the lawn.

In connection with a choice of location, we must see that roses are provided with a proper soil. Where there is too much clay the soil can be made sufficiently friable by the application of wood and coal ashes, lime, burnt earth, etc. Where, on the other hand, the soil is too sandy or too light, we need to bring clay, leaf-mould, muck, etc., to give sufficient body. On no account attempt to make roses grow in a wet spot. If there be such place which it is desired to use, let the soil be thoroughly drained by sinking tiles to a depth of four feet, or provide in some other way for carrying off the water.—"The Rose," by H. B. ELLWANGER.

SELL YOUR OWN FRUIT, AND SAVE THE MIDDLEMAN'S PROFITS.

THE best method of creating and establishing a trade in a new field is to run a delivery wagon. The commission of the seller will more than pay for the extra work, the sales are more easily increased and the customers more easily retained. The latter's tastes can be more easily learned and their supplies more readily selected to their satisfaction. In starting in the business try and obtain for customers some of the best people in the village. Tell them plainly your intentions and secure their consent for a trial before the fruits and vegetables are ready for sale. By doing this, the best consumers are secured from the first; and when the time for delivery comes, a route is already established and the dread of peddling is removed. Invite customers to make criticisms. The best may be hard to please, but I have found them willing to pay well for what they want, and supplying their wants will teach the grower to be particular and painstaking. These qualities should be early learned and always retained.

I never put inferior fruit on the market. The sorting is done by the pickers in the field and they also face the boxes on top, not with the largest berries, but with the medium-sized, placed with the hulls down. The object is to get each box uniformly full and add attractiveness. Facing the box makes it a thing of beauty to the picker, and being particular with the top will teach him to be neat in all the work.

By the time the season is fairly opened I set my prices and stick to them. By doing this, I begin to take orders for canning at once, and my customers know that no matter when they take the fruit for this purpose, the price will be the same. By the time home-grown berries ripen, foreign berries are selling at 10c. per qt. I start at 12c. in that case and drop to 10c. when the main crop ripens and hold to this price through the season. One thing to guard against is not to charge one customer more than another. This they will not forget or forgive. When the customers find out they cannot buy for less than the given price, they will stop haggling over it. If I can get 10c. for strawberries, I do not raise after the crop begins to get scarce, and the regular customers are the only ones supplied at those times.

It is surprising to see how much fruit a family can be made to eat. When fresh strawberries are offered at their doors it takes quite a degree of self-sacrifice on their part to say no. If one variety of fruit does not quite suit their fancy have another differing in color or flavor. Keep them eating and canning all summer, and the secret of doing it, is to place the fruit where they must say no, instead of leaving for them the necessity of going to the market for their supplies.

Have settlements monthly, as collecting daily takes too much time and many customers would refuse fruit because of lack of change. Supply each customer with a book in which you charge, from day to day, the supplies furnished.

Raspberries follow strawberries without a break and a steady supply is kept up. I raise blackberries and red varieties, but mostly the latter. The Shaffer, a purple variety, is liked by many for canning, for which purpose I know of none equal, either red or black. Blackberries have been a failure more often than a success, and I do not raise them, but as the grower has the market or a good list of customers looking to him for their supplies, he should make the marketing continuous until the last of the winter's fruit is sold. Those varieties should be planted that give a succession, and leave no break in the season.

Follow the berries and currants with grapes, plums, peaches and apples. Quite a demand for grapes was made by mixing the black, red and white together in the same box. When the grower is in daily contact with the consumers it is possible to experiment in many such ways to tickle the palates and please the fancies of the customers by combining and arranging the various supplies in many such ways. The grower should be a storehouse of knowledge as to the various ways of canning, preserving and making jellies and marmalades of the various fruits, and be prepared at all times to supply the demand that his energy and watchfulness creates.—Farm and Home.

STAMP OUT THE BLACKBERRY RUST.

Blackberry and raspberry anthracnose, or rust, is produced on the canes in the form of small round or elongated whitish patches, slightly flattened and bordered with a ring of dark purple. These patches gradually increase in size and number, and finally destroy the new growth or stunt it badly. Upon the leaves it is often visible as very small yellowish spots surrounded by a dark border, resembling those on the canes and leaves. The fungus producing the disease passes the winter in the diseased canes and leaves, a fresh crop of spores is produced from the old spots in the spring, and the new canes and foliage are readily affected.

The raspberry anthracnose soon becomes deeply seated in the canes, and no fungicide can reach it. The disease can be greatly retarded by cutting out and burning all diseased wood. It should be cut out in winter or very early spring, below the lowest diseased spot. If the canes are then sprayed before the leaves start, with a solution of sulphate of copper, using one lb. to 25 gals. water, and if necessary sprayed two or three times during the summer with Bordeaux mixture, very little damage is to be feared.—Farm and Home.

SI HOSACK: "How brown an' yaller the sun is settin' to-day." Liz Francis: "Yes; it looks for all th' world like one of mother's punkin pies!"—Life.

WINTER WORK AMONG FRUITS.'

HE above is the title of a paper by Mr. L. B. Pierce, a well-known member of the Ohio Horticultural Society. We make a quotation from it on Winter Pruning; but in reading them our readers should be cautioned about the difference in climate. Winter pruning must mean late fall and early spring pruning with us in Canada, because our winters are seldom mild enough to favor this work in that season. Besides this, it is important to coat with paint, or varnish, all large wounds of our fruit trees, unless made fresh in the height of the growing season, in order to prevent the drying of the wood, and cut portions of the bark; also to prevent injurious action of the cold upon the exposed cells.

The longer I grow fruit, says Mr. Pierce, the more apparent it seems that a grower of all kinds has many advantages over the specialist. The grower of a single kind has but three or four weeks in which to market his crop, if it be anything except apples, and if his one crop fails he must depend upon something outside of fruit for a living until another fruit season.

On the other hand, the grower of all kinds is occupied in marketing from June until January or later, and the same team and wagon and many of the conveniencies used in gathering and marketing can be used all through the season. The grower of summer fruits who has a local market may supplement his garden with a winter apple orchard, and thus find work for himself and team until near Christmas. Any one possessing a number of acres of orchards of the various fruits, can generally find work for all mild days in pruning, removing brush and rubbish and putting the orchard in first-class order. It used to be supposed that pruning must not be done when the trees are frozen.

By doing the pruning in winter many large orchardists are able to keep a part of their men employed, when the men need work the most, and at the same time have the spring months for something else. Fruit trees do not freeze at as high a temperature as water, and generally when the thermometer stands at 26 degrees or above there will be found no frost in the branches. If the orchard is old and there are dead branches and sprouts started on the bodies, these may be removed in the morning, trimming green growth in the tops later in the day as the temperature rises. There is no way of telling on paper just how a tree should be pruned, as each tree differs in its wants, and must be pruned accordingly The first thing is to remove all dead wood, and all branches that cross or clutter the inside of a tree making it difficult to climb into it.

After this trim to balance the head, making the tree as symmetrical as possible. Where the tree has not been trimmed for several years there is often strong new growth here and there through the tree, that unthinking pruners think they must cut. I have noticed that professional pruners around cities and villages, generally make it a point to take out all wood that has a suspicion of newness about it. Now in many instances I think this is wrong. These growths called water sprouts, are efforts of the tree to make up for previous over-pruning, and are a step in the way of keeping up its youth and fruitfulness. One will often see in the old neglected apple tree, a sprout start with health and vigor, and in a few years become a large bearing bough while the older limbs are barren.

Water sprouts (all vigorous shoots starting from main branches are called by this name) are often in just the right place to balance the tree or to fill a vacancy in the top, and in such places scrupulously preserving them will be an advantage, and if they crowd older growths in a few years, then older branches may be removed to make room. There are instances where apple trees have been pruned on the renewal system, cutting away a portion, each year, so that the entire outer portion of the top is renewed once in six or seven years. Such a course accompanied with high feeding has resulted in great thrift and productiveness, and there is no doubt room for a good deal of valuable experimenting along this line. Pears require about the same course as apples, but in rich soil require more shortening in. Mr. C. W. Counter, of Toledo, one of the most successful pear growers in Ohio, shortens in more than half the new growth each year. He gives high cultivation and gets a growth about three times as rank as ordinary orchardists, so perhaps there is more need of severe pruning. Cherries require but little pruning, and peaches and plums are generally pruned by shortening in the outside with a view to making a more compact form. There is, however, a difference of opinion in recent years about the desirability of annually shortening in peach trees. With the most persistent efforts to form a symmetrical head, the peach will throw off its lower growth and become spreading and of a form that requires propping, as soon as it begins to bear heavily. This seems to be Nature's way of bringing every portion of the tree out into the sunlight and air, and for the last few years I have left the matter of shaping the top entirely to Nature, pruning only to remove dead wood. All rules have their exceptions, and the almost universal way at the north of pruning newly set peach trees does not work as well in the south and south-west.

The pruning of grape vines is also in order on any mild winter day. This is generally made a difficult job and few amateurs go at it with any definite idea what the result of their efforts will be. It is really much more difficult to decide just how much to prune a vine upon a house or arbor than one in a vineyard because the latter is kept within certain close limits and pruned by certain rules which are not apt to vary much from the wants of each vine.

The only rule with large vines upon arbor, or house is to remember that each bud will produce a shoot and that buds multiply with a rapid ratio on a vigorous growth.

The remarks of Mr. Pierce regarding the encouragement of stout, young, and thrifty shoots in old apple trees are in line with our own experience at Maplehurst. Our old orchard, nearly one hundred years old, had been always kept pruned up closely, all shoots in crotches and on limbs carefully clipped off, until every bearing portion was almost beyond reach of the ladder. A few years ago the writer determined to allow a few vigorous shoots in various parts of the trunk, crotches and branches to grow. They have shown double the vigor of the old limbs, borne far the finest fruit, and to-day constitute the larger portion of the top of the tree.

THE GOOSEBERRY.

The gooseberry is a neglected fruit with us, and, as the autumn is the best time for starting a plantation of it, we want to say a few words in its favor. The market is very rarely over-supplied with the fruit, and a reason for this is that it can be gathered and marketed through a long season, instead of all having to be harvested and sold at one time. The green berries sell readily almost as soon as they are large enough to be picked, and bring then the best prices of the season, but this is equalized by the fact that later on they are much larger, and a bush will yield more quarts. A gooseberry bush at two years from the time of planting should yield three quarts of fruit, and after that five quarts a season. An average retail price is about 10 cents a quart. The crop is almost a certain one, for if the worms are kept off, which may be easily done by the use of hellebore, the only other enemy which they have to fear is mildew. Our native varieties are not much subject to that. The plants should be set on cool, moist soil, and a partial shade does not injure them. Close pruning will increase their productiveness and tend toward making them longer lived. The fruit is the earliest of any we may have from our home gardens, and, for this reason only, should be more widely grown than it is. In planting we advise procuring one year plants in preference to those older. Give good cultivation, a regular manuring in the fall, and a cool mulch in the summer to protect the roots, and we think you will have no cause to complain at the profit which a small patch of the fruit will give you.—Western Plowman.

MRS. BILLUS (after the company had gone): "Johnny, you shouldn't have eaten those preserved fruits. They were not intended to be eaten. They were put on the table to fill up." Johnny Billus: "Well, that's what I used 'em for, mamma."—Boston Globe.

WINTER CARE OF TREES.

THERE is no better time than the present to examine groves and groups of trees in order to determine whether they are becoming overcrowded, and to designate those which should be removed to make room for the rest. The axe is the only remedy for crowding among trees, and when the heroic treatment is necessary, no considerations of sentiment should be allowed to interfere with its use. At this season, too, it is easier to find where branches are growing too thickly on a tree, and where they are rubbing each other, than it is when they are in full foliage, and in the warm days of midwinter pruning can be done to advantage. When it is necessary to remove large branches they should be sawed close to the trunk and the edges cut smooth with a sharp knife. Coal tar applied to the wound will keep out moisture and fungi, and thus prevent decay. Any kind of ochreous paint will answer almost as good a purpose, and it can be easily applied with an ordinary brush. All sprouts could be cut from the trunk and all suckers from its base, but the dead twigs in the heads of trees can be more easily detected in the summer. Of course, all diseased limbs should be amputated, and so should the branches of such trees as Hawthorns or Yellow-wood that are badly infested with scale. A top-dressing of loam or fine well-rotted stable-manure spread over the roots will encourage a vigorous growth next year. The dressing should be scattered over a circle as far as the roots extend.

In the Shrubberies.—Shrubs, too, must be well fed if they are expected to make luxuriant growth and show their highest beauty. No cultivator thinks of obtaining a fair crop in garden or field without fertilizing his land, and yet too many persons starve their shrubberies and then wonder why they are thin and unattractive. Of course, the shrubs like Coreopsis, Forsythia, Van Houtti's or Thunberg's Spiræa, Cercis, the bush honeysuckles and other shrubs which flower early, should not now be cut in severely, since the buds for spring flowers are already formed, and if we cut away the branches we destroy the possibility of flowers next season. If late flowering shrubs have not yet been pruned, the work can still be done, and this will encourage the growth of wood which will bear flowers later in the season. In this class are the Althæas, Hydrangea paniculata, Indian Tamarisk and others. The pruning of roses which are liable to be killed back to some extent had better be postponed until spring, so that we can be sure to cut below the dead wood.—Garden and Forest.

"I SAY," inquired the lady-bug; "why don't you dress in the prevailing colors?" "Bah!" answered the potato-bug; "lavender doesn't go with my complexion, and these Paris greens simply make me sick."—Puck.

GUARD AGAINST MICE.

WHERE snows cover the ground for a large part of the winter, and often for a considerable depth, mice are well protected from observation by their natural enemies and are enabled to carry on their work of injury without molestation and without exciting suspicion. As they burrow their way from one place to another, or from one tree to another, either along the surface of the ground between the soil and snow, or through the snow itself, it is an efficient and inexpensive preventive of injury to trample the snow until it is quite firm and compact about the plants. This is very quickly done and leaves the snow in a condition which mice find it impossible or inconvenient to work through. The greatest danger is to be feared in the vicinity of fences or hedges, where snows drift and lie deepest. In such places the destruction of the bark sometimes extends from the ground to the lower branches of young apple and other trees, especially as mice are liable to be most abundant about the boundaries of an orchard, as such boundaries are usually in such a condition as to be really a refuge for vermin. Where snows are not deep or permanent in winter, it is often necessary to furnish the trunks of small trees with some kind of protection. They are particularly liable to injury if growing in the vicinity of grass or herbage.

For such protection any material may be used which is unpalatable or impregnable to mice, and is not too expensive. Laths and pieces of boards and staves are effective if loosely bound around the trunks by string or wire, the lower ends resting upon or slightly inserted in the ground. These are sometimes left on all the year, but in other cases are removed in the spring and replaced in autumn Tarred paper is also used, but, unless very thick, it is liable to become broken down and insufficient. What is known as asbestos-paper has been found useful. This or the heavy tarred paper should be cut into strips which will reach a foot or more up the trunk of a tree, and wide enough so as to go around the stem and overlap at least an inch; and also leave half an inch loose space between the bark and paper, which should not be bound tightly around the stems. The lower ends of the paper may rest on the ground, and the sheath can be held in place by a couple of strings. If there is plenty of room for growth allowed, the paper need not be removed, and it will still last for several years. Painting the trunks with tar has been advised, but it is doubtful whether this would not injure young trees, and, although painting with other substances may answer the purpose, they are not so reliable as is an actual barrier.—Garden and Forest.

NATURALISTS assert that a healthy swallow will devour 6,000 flies every day.

NOTES SUGGESTED FROM READING THE JANUARY HORTICULTURIST.

N "*Raspberries New and Old*," for yellow, Golden Queen is omitted. If all except it were omitted, the list would be improved. For Southern Ontario the Gregg is the most valuable black cap; in colder regions, Hilborn is probably ahead of Souhegan, Mammoth Cluster and Ohio. Of new varieties, Thompson's Early is a poor grower and abundant bearer, of early, medium-sized, fairly firm fruit; simply useful as an early variety. Plant and fruit of the wild type. I have tried Ada, Palmer and Johnston's Sweet black caps; they seem to be weak growers, the Ada especially so. The Palmer is early and may be useful, the fruit is rather large. Johnston's Sweet gives medium-sized fruit of good quality.

Why does not R. B. Whyte, of Ottawa, allow his raspberry canes to reach their ultimate height in the fall? They would, I think, bend down for winter protection more readily. In spring they could be shortened.

"*Kiefer Pears.*"—In colder sections of country, in colder soils, or if not allowed to remain long on the trees, I think these pears will have little value. On warm soils, in the warmer sections, they will be very valuable. They are fine growers and great bearers. A good-sized, beautiful golden-yellow, juicy, spicy pear, will in November have numerous friends and admirers. When well grown they can be readily canned and have a quince-like flavor. They are not as rich and sweet as some earlier pears.

Your "Farm and Home" writer decides that the pear has no insect enemies except the fall web worm. This is all very fine, but by no means correct. He ceases to cultivate pears in September. This kind of teaching has caused many a grower to get weeds and sod well established about his trees, and this commonly means failure. The grasses and the biennial weeds start in autumn; therefore, cultivate in autumn.

"*A Rapid Growing Maple.*"—Although evergreen trees, such as Norway spruce or Austrian pine, make the most effective windbreak, they are not suitable for roadside planting. Many people use maples, but very few know that a variety that is not only cut-leaved, but grows four times as fast as the ordinary kinds, can be readily obtained. From its rampant growth it inclines to form an open head. To make a compact head, the limbs require to be shortened in a few times. It has been well tested here, and has proved its value. The name, *Acer dasycarpum heterophyllum laciniatum*, correctly describes the variety. It is much used in the prairie regions, where rapid growth is urgently called for.

"*Strawberries for Home Use.*"—At present, the Bubach is the leading berry. It is a very fine grower, makes a fair supply of plants, and produces a large crop

of berries that are rather sweet, fairly firm, and which are of good size the season through. Although supplied with but few stamens, it fertilizes well with me. Perhaps the presence of other varieties may account for this. Warfield is much like Crescent, but rather larger, and hulls easier.

Williams has white ends, and, so far, does not equal Bubach in productiveness or quality. I have discarded Col. Cheney, Seth Boyden, Monarch of the West, Great American, Downing, Cumberland, May King, New Dominion, Manchester, Sharpless, Crescent Seedling, Atlantic, Jessie, Kentucky, Belmont, Bidwell, Capt. Jack, Prince of Berries, Arnold's varieties, and many others. Most of these succeed occasionally, but are not reliable.

Niagara Falls South. E. MORDEN.

Garden Seed should and will be grown in a climate that is most favorable to the production of the vegetable. One favorable for the growth of vegetables where the seed is eaten (such as peas, beans, etc.) would be one that induced rapid growth, for we know that the seed is wanted as soon as possible after sowing, as it is the seed only that is sought by the gardener, and it would be difficult to get an early sort where vegetables grow slowly. For the class of vegetables of which the substance is eaten or used (such as lettuce, cabbage, cauliflower, etc.) a climate should be selected where the growth is slow, since the longer the period of running to seed the better, especially so with lettuce and cabbage. If the seed stock in lettuce makes it appearance almost as soon as the lettuce is in head, the result is very unsatisfactory, as the quality is regarded as very poor.—C. C. MORSE, before World's Hort. Congress, 1893.

Manure for Bulbs.—An ounce of nitrate of soda, dissolved in four gallons of water, is a quick and good stimulant for bulbs, to be applied twice a week after the pots are filled with roots, and the flower spikes are fairly visible. A large handful of soot, or about a pint, tied up in a piece of old canvas, and immersed in the same quantity of water for a day or two, will furnish a safe and excellent stimulant; also good and safe is a quarter of a pound of cow manure mixed in a large garden pot of water, and used as required. Any of these stimulants will do good, or the whole of them applied alternately will benefit bulbs that need more sustenance than the soil affords.

How to Grow the Pansy.—The pansy delights in a cool, rich loam; the richer, the larger will be the flowers, in a partially shaded situation. It never flourishes as well during the hot days of July and August as later in the season. Young plants, from seeds sown early in the spring, if the bed be very rich, will come into handsome bloom during the latter part of June. All the first blossoms should be picked off that the plant may first become robust. Even with the old plants, the great secret of keeping them in constant bloom is to pick off the blossoms early and constantly, since it weakens the plant more to ripen one seed-pod than to yield a dozen flowers.

DISEASES OF RASPBERRIES AND BLACKBERRIES.

THE red rust is comparatively well understood since the Department of Agriculture has investigated it. This rust has a perennial mycelium which lives over winter in the plant and develops with the young canes the following spring. In the summer of 1892, a single blackberry-bush was found on the station-grounds, affected with the disease. On June 23rd all the canes were cut close to the ground, and new ones, apparently healthy, sprang up. This spring, however, at the usual season, the leaves and twigs were covered with the well-known orange-red color, showing that the fungus had been continuing its growth all the time within the tissues of the plant, and was ready to develop its spores at the proper time. This one fact in the life-history of the fungus being known, it is easy to see that a plant once attacked is doomed, and that the only remedy is to dig it up and burn it. Spraying may prevent the germination of some of the spores which it scatters abroad, but it is far cheaper to begin at the source and prevent their production in the first place, by rooting out and burning every diseased plant the moment it is discovered. It may be necessary to look after the wild raspberry, blackberry and dewberry plants in the vicinity, for, if they are numerous and badly affected, the disease may spread from them faster than from any other source.

The anthracnose, glæosporium venetum, is another serious disease. The hyphæ of this fungus do not extend from the old to the new canes, as in the red rust, and if all the portions could be cut away this would be an effective remedy. The attacks of the fungus, however, are so indiscriminate and general that in most cases the remedy is impracticable. It is hard to counteract it by spraying, because of the difficulty in protecting all portions of the cane with a coating of the material. Probably the Bordeaux mixture will be found effective if the spraying is begun with young plantations, and the treatment continued throughout the year.

Another disease, which is probably more common than is generally known, manifests itself by large knotty swellings of the roots. Affected plants lose their vigor and productiveness, and with our present knowledge, we can only say, that it will be prudent to avoid setting out plants which show any such swollen roots. The cause of these swellings is yet a mystery.—Garden and Forest.

THAT FRUIT GROWING IN ONTARIO is so extended an industry seems to be a great surprise to our American cousins. We notice in the N. Y. Commercial Bulletin and in the California Fruit Grower, a paragraph quoting Prof. James' statement at our Peterboro' meeting, that the Province of Ontario has 7,000 bearing apple trees, 2,000,000 grape vines, 700,000 plum trees, and 500,000 each of cherry, pear and peach trees.

CLEMATISES.

CLEMATISES have been familiarized to the great body of amateur gardeners by the not uncommon spectacle of a vigorous plant clothing a fence or wall, and covering it with a rich profusion of large violet flowers. Asked the name of the plant, there are few persons at all interested in flowers who would not be able to tell you that it was Clematis Jackmani, just as they could point out a rose, a honeysuckle, or a convolvulus. Under such a guise as that indicated, no flower could more attractively present itself, for there is a natural grace and beauty about the plant when rambling over a wall or arbor which appeals irresistibly to every mind, and is quite distinct from the effect produced by the richness of its flowers. A magnificent trained specimen at an exhibition, in every respect a perfect exemplification of skill and unwearied attention in culture and manipulation, awakens passing astonishment and, perhaps, admiration, whatever the plant may be; but the floral pictures that stir the latent love of the beautiful most deeply, and linger longest in the memory, are those in which nature blends with art, and imparts a large measure of her own wild charm to the object that is admired. A rose or a clematis rambling over a fence, tree stump, or wall, sending out vigorous shoots in all directions as though rejoicing it its freedom, following no given course, and restricted to no formal radius, will afford a deeper pleasure to everyone to whom the least grain of taste has been accorded, than any stiff and confined object can possibly do.

The merits of clematises, considered from the amateur's view point, are of no common kind, and provide claims not likely to be ignored. Hardiness is one of the most important of them. The visitor to a large nursery who may see plants trained over trellises in pots, and growing under glass, need not come to the conclusion that because this course is adopted glass protection is a necessity. Clematises are quite hardy, hence they can be planted without any doubts as to subsequent destruction by cold haunting the mind of the grower. They are easily cultivated; a free and fertile garden soil will suit them admirably, and after planting, the only attention needed is an annual pruning and top-dressing of manure and fresh soil. In suburban gardens they flourish seemingly as well and contentedly as in country districts. They are free-flowering; this is another great point. Many will have noted the wealth of bloom the plants produce, and their striking beauty when in full flower is not easily to be described. They are useful for a great variety of purposes. Their suitability for covering walls,

fences, arbors, and summer-houses has already been commented on, and, indeed, must have impressed itself forcibly on the minds of most readers of these notes. It has, moreover, been indicated that they are very beautiful when rambling over stumps. A charming effect may be produced by their employment for this purpose, and many a pleasant picture could be provided if a break from the stereotyped methods of garden decoration were boldly decided upon, and carried out with a careful hand and tasteful eye. Clematises are also well adapted for covering sloping banks, and have been effectively employed for bedding, the growths being trained to cover the surface of the soil, and pegged down.

Though Clematis Jackmani is beyound doubt the most popular and useful of its family, there are many other species and varieties that are largely grown, and in some the flowers are individually more beautiful. A well-known native species is the Traveller's Joy, Vitalba, which produces white flowers in spring, followed by graceful, gauze-like seed vessels, and another white-flowered species — Montana — flowering in May, is free and useful. Had these been the only clematises in cultivation, the richly-colored varieties of the present day could not have been evolved, but Viticella, a Spanish species, and Patens, Lanuginosa, and Florida, among Japanese kinds, afforded more promising ground-work for the hybridists, and their skilful and patient labors have been attended by splendid results. To name all the beautiful varieties that have been raised would be impossible within the limits of a short article, and possibly it would entail embarrassment for the amateur if he were left to choose amongst them. Jackmani, of course, is indispensable; the type is bluish violet, and there are several varieties of different color; these flower in autumn, as does the beautiful Star of India with its striped flowers. For early blooming, Patens (mauve) and Miss Bateman

FIG. 419.—A BUNCH OF CLEMATISES.

(white) may be chosen, both being extremely attractive; and to afford a succession until Jackmani flowers, select Viticella Major (purplish-red) and Henderson, (purple).

Clematises are grown on a large scale in many nurseries, and they are kept in pots so that intending planters can to a large extent suit their own convenience as to purchasing. Either autumn or spring may be chosen, the chief consideration being the state of the soil. When it is in a friable condition, and the weather is open, the plants may be put in. They should have a good depth of porous, fertile, well-worked soil, with ample drainage; this provided, a great step towards success will have been achieved, and annual top-dressings of rich soil will maintain the plants in vigor after they have become established. The plants must be pruned after planting, cutting in the stems to the best and boldest buds, even if the plants are thereby cut half away. Those of the Jackmani type flower on the summer shoots, and to encourage the production of these the previous year's shoots should be cut in to about two eyes from firm ripe wood in early spring, when the allotted wall space has been filled. With plenty of vigorous young shoots trained in, abundance of large and richly-colored flowers will be produced.—Garden-Work.

The Harris Apricot.—Mr. S. D. Willard, of Geneva, New York, stated at the late meeting of the Ohio Horticultural Society that the Harris is the earliest variety of apricot grown in Western New York, and it ripens fruit about the 15th of July. The tree is of dwarf habit; the fruit is large and of good flavor. Harris and Mont Gammet are good varieties for home use, and St. Ambrosia is good for market purposes. Some trees near Geneva have borne five or six bushels in a single season, which have sold for ten dollars a bushel. The market, however, is limited, although the canneries would probably use all the surplus. New York State apricots, when canned and sold on their merits in the Boston market, brought fifty per cent. more than the same fruit from California. The curculio on the apricot is fought in the same way that it is on the plum, but it can be conquered more easily. When plums are grown near apricots the curculio seems to give its principal attention to the plums.

Yield of Grapes in New York.—A writer in the Grape Belt says: "In the Chautauqua district the average of bearing Concord vineyards is, by the substantial agreement of competent observers, not to exceed 500 9-pound baskets, or two and one-fourth tons per acre. In contrast with this we have the fact that in each town there are growers who produce 1,000 baskets, and in the case of some exceptionally skilled vineyardists a yield has been attained of 1,500 9-pound baskets per acre. Where we seek for the causes of this low average we find them in the poverty of soil of worn out lands, in the imperfect stand of some vineyards, many vines being missing, in the inevitable breakdown of trying to grow weeds and fruit at the same time, and in faulty methods of pruning and the construction of the trellis."

FLORAL DECORATIONS.

HALF the enjoyment derivable from our surroundings consists in knowing how to use the things at hand, and to dispose of them to advantage. A room with the same furniture may be elegant or commonplace simply as a result of the disposal thereof, with or without taste. So with the beautiful floral treasures with which nearly every rural home is plentifully supplied, it is not money but taste that is required in order to decorate the rooms and furniture of the house in elegant style. A writer in the American Florist gives the following original hints for a plan of floral decorations for a special occasion.

The Jerusalem cherry is a charmingly prim little plant and it might be used to advantage in any spot where the whole of its figure will be seen. It needs a pretty pot and some moss to hide the homely clay pot it grows it. The same applies to the azalea. But in using the latter it ought to be placed where it will be seen by itself. I do not wish to speak in any derogatory terms about anything which seems to me devoid of artistic merit; it is much better to pass what is worthless and draw attention to that which is really beautiful; but I must say that the fashion of massing a lot of plants together is, in the majority of cases, especially in moderately large rooms, decidedly tasteless. The azalea and the Jerusalem cherry tree should be isolated.

Note my arrangement for the corner of a room; instead of banishing the beautiful black silk, gold-embroidered Japanese screen, it might be fastened flat against the wall and thus furnish a splendid background for a specimen of Deutsche Perle azalea. The smilax or asparagus can be fastened to the picture moulding and hang gracefully until it touches the edge of the screen.

My suggestion for a mantel pre-supposes the style of this to be Colonial, but the idea can be worked out with a mantel of any style. No material for holiday decorations impresses me with its artistic worth quite so strongly as the long needle pine (Pinus

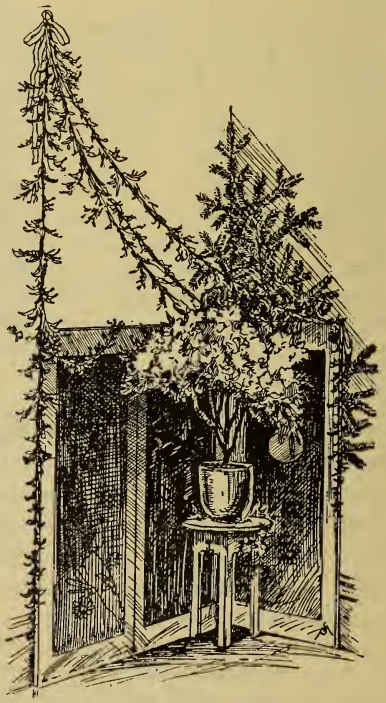


FIG. 420.—CORNER OF A ROOM.

Australis), which is capable of being arranged very beautifully in some prominent point in the decorated room. On the mantel shelf I should place white white and yellow carnations and mignonette; in the vase at the right a fine bunch of yellow or white roses would be pretty; and last, but not least, is the effective little lamp, whose dainty light will cast a soft glow over the neighboring flowers. A fairy lamp would also add materially to the beauty of the design.

This removal of things in general from all appearance of the commonplace means that it is better to cut loose from all usual customs in the decoration of a room, and adapt flowers and plants to every condition of furniture and archi-

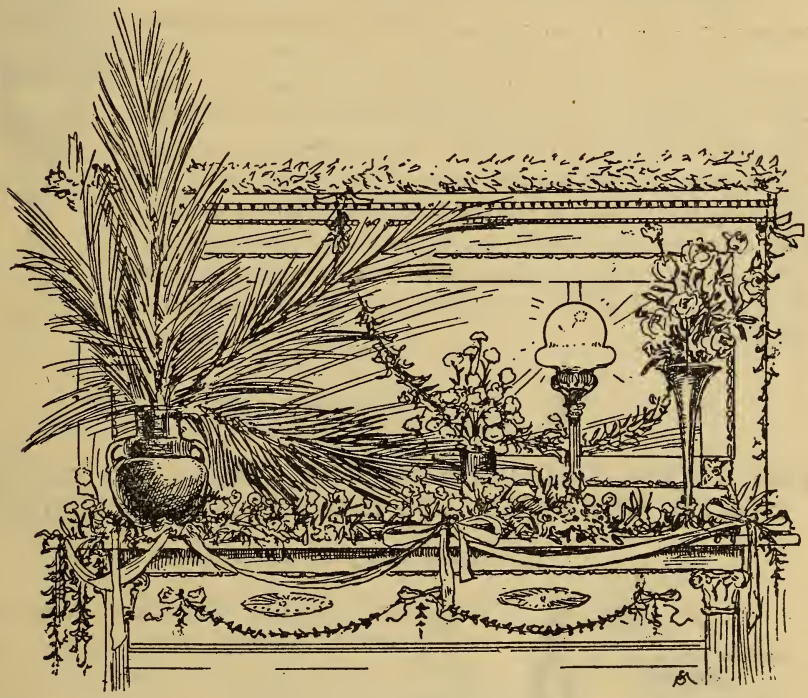


FIG. 421.—A DECORATED MANTEL.

tecture; the bookcase, cabinet and china dresser all afford some excellent points for the display of flowers. The top of a bit of furniture which is just below the level of the eye can be covered with greens and a vase placed in the midst, filled with a strong bit of color, or the sweeping lines and effective form of a plant like the palm, or even the poinsettia. Narcissi and cyclamens should never be placed more than a couple of feet above the level of the floor; they are plants which (as they grow naturally) we look down upon, and I see no reason why we should not adhere to natural methods in working out a decorative scheme.

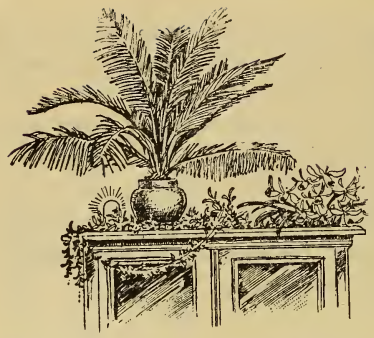


FIG. 422.—TOP OF A CHINA DRESSER.

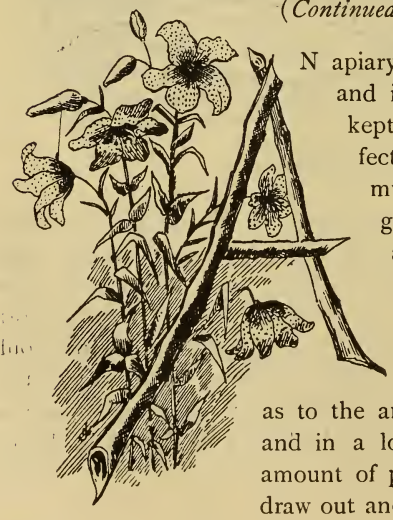
Whenever flowers are to be accompanied by ribbons these should be very carefully selected, lest the colors interfere with each other. In the little drawing of a hanging silver bowl containing a bunch of Magenta Cattleya the ribbon is supposed to be of a bluer tone than the flowers. Any other color than a dull magenta or a purple magenta does not serve the purpose quite so well. I have seen this fact demonstrated beyond all question, where the ribbon was crimson in hue, and as a consequence the delicate sober color of the flowers was completely spoiled. Such a hanging bowl or basket is a delightfully appropriate accessory to artistically arranged flowers; there are many pretty designs made in silver plated ware of this order, any of which would be an acquisition.—The American Florist.

FIG. 423.

The Apiary

THE TWENTY-FOURTH ANNUAL MEETING OF THE NORTH AMERICAN BEE-KEEPER'S ASSOCIATION.

(*Continued from January Number.*)



N apiary should never be run for comb honey alone, and in running for comb honey, the only object kept in view should be the production to perfection of this article. To do this, swarming must take place. From clean parent colonies good comb honey may be secured, but rarely as good as from swarms. When the bees swarm they should be hived on the old stands and either on very narrow strips of foundation about half an inch deep or on full sheets. Localities undoubtedly vary as to the amount of pollen deposited in the combs, and in a locality in which the bees gather an undue amount of pollen, I should say try and make the bee draw out and fasten to frames foundation early in the season, and hive the bees upon these combs. Failing this, use full sheets of

foundation. The object of the sheets or combs is to assist in preventing pollen from being carried in the sections. Localities in which pollen is not troublesome the bees should be hived on starters, and after allowing one complete day to pass after time of hiving, put supers on the hive. I have not much faith in added energy through swarming, but the bees have at the commencement no brood to care for and feed, and they give better results as to surplus. If sections on some old stock are about ready, it is a good plan to give these to swarms to finish. They will make very rapid work in finishing them. Now, as to the combs which will be built from the starters, we know when a young queen is in the hive the bees will be less inclined to build drone comb, but is this condition practicable for a comb honey producer? I think not. The plan of re-queening with young queens before the honey flow is not desirable, from the loss of time resulting from introduction of new queen and taking out of the old one. The truly successful comb honey producer, must be ever on the watch to improve his stock, in this direction, he should know by numbers what supers have been finished by every colony, and when he notices section supers, with well capped comb and free from brace comb and propolis (this latter characteristic should be especially observed), he should note that hive, especially if the amount of honey secured has been large. Next season he should breed from such a queen, and so on, producing from year to year a better strain of bees. I am not saying a word against queen breeders. I am a queen breeder myself, but a comb honey producer should have a strain of bees which, although they may not be the best in the world, yet must be of sufficient value to him to cause him to replace them with extreme caution and only with something tried by himself. To prevent deterioration some new blood must be introduced each season ; it is then impractical to have young queens with swarms, and often with such queens there will be an undesirable amount of drone comb. I have within the last two weeks seen the result of an extensive experiment conducted by S. T. Pettit, of Belmont, Ontario, under the following directions :

The swarms were given one or two combs entirely drone, the balance starters, with the hope that the bees would be furnished with worker comb, but they appear to have no power of reasoning and in every instance appear to build as much drone comb as if the first combs had not been given. For extracted honey, I favor full sheets of foundation every time, but for comb honey my arguments for starters, unless in exceptional cases, are these : We are trying to get the most honey out of these bees and we want the best product, if we do not care for much increase, we can shake the bees from these combs after the season is over and destroy them. If we wish to winter them we can put them on good combs and feed them on sugar syrup for winter stores. The combs built by the bees can be patched up to the best advantage, the old hive placed directly behind. The old stand can be treated thus : shake almost six days after swarming a good many bees from the comb adding them to the new

swarms in front, and either utilize the comb in another place, or put the hives on new stands and let it build up for winter. I am never troubled with second swarms. The location of an apiary has much to do with swarming. In places where the air can freely circulate the amount of swarming will be reduced, the nature of the soil even will have an influence. I like the apiary on sod and the hives to be placed under the outer edges of the shade trees. I never give in the production of comb honey any upward ventilation, and herein lies an important secret, towards securing white and clean sections. The bees resent such a current of air, and when given begin to apropolize, and soiled sections are a result. A quilt should not be used unless a heavy cushion and a heavy lid be placed above to prevent the bees from pushing the quilt off. I like a honey board and a quarter inch bee space above the combs. Shade boards are used on top and even sides of hives. They are a great advantage. It is unnecessary to say that no one can engage in the successful production of comb honey with one super only, and yet, there are many who think such a practical economy. Before the advent of the bee escape I drove bees out of the comb honey supers by spreading over them a cloth dipped in a weak solution of carbolic acid, the cloth being wrung almost dry before spreading. This works very well, but the bee escape still better. My system is to produce a certain amount of comb honey. This prevents cull sections, except in very exceptional seasons. Only a choice article should be aimed at, even if we never exhibit, for by so doing we place ourselves to a certain extent out of reach of competition. We command higher prices and a ready sale.

A lengthy discussion followed, some favoring starters, others not. Mr. Taylor, who is conducting a Government Experimental Apiary, stated his work for the past season had been against using starters only for foundation, but of course no conclusion could be arrived at until repeated tests had been made. It was shown that the length of the honey flow made a marked difference.

A discussion took place on "Fixed Spacing and the Prevention of Brace Burr Combs."

This subject is attracting a good deal of attention, and the general opinion appears to be, that by means of quarter inch bee spaces and thick top bars very much superfluous comb could be avoided. The question of a honey board or queen excluder was brought forward; it was generally admitted that for comb honey no queen excluded was necessary. Not many years ago, such a contrivance was considered an absolute necessity.

Samuel Simmins, Seaford, England, submitted a paper upon "Swarming and the Prevention of Swarming."

Mr. Simmins advocated the taking out of combs from the brood chamber and giving the bees room to build comb, extracting freely, young queens, artificial swarming. All of these methods have been tried by bee-keepers in America and every one of these methods are not considered desirable.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

Gypsy Girl and Princess Louise apple trees are reported hardy, thus far, by A. S. Crosby, Compton, Que.

Peach Leaf Curl.—Prof. Craig writes that his remarks at Peterboro', concerning peach leaf curl, have reference to the result of some experiments in Australia, for the treatment of peach curl with Bordeaux mixture, by which the peach curl was entirely prevented. The results were reported to Mr. Craig through an Australian gentleman, who stated that of all the experiments he had tried in spraying, none were more satisfactory than those he had obtained in the treatment of this disease by applying Bordeaux mixture before the leaves open and afterwards at intervals of ten days for three successive applications. The result was entire immunity from disease.

Wrapping Choice Samples of Fruit is a troublesome piece of work, but there are cases in which it pays the grower to take such trouble; and that is with extra fine samples and where the shipper deals continuously in certain markets, and aims to build up a reputation for his goods. A lesson may be learned from the orange shippers, who wrap their fruit in printed tissue paper, on which are stamped the name and place of the grower and his name. Such fruit sells for a price quite above the ordinary. How much we have yet to learn in order to handle our fruit in the very best manner! And this is the part that pays best, for every cent of advance received for our fruit, above a certain sum, is all profit.

Russians or Natives.—At a recent meeting of the Iowa Horticultural Society, an interesting paper was read by Mr. C. L. Watrous, of Des Moines, in

which he reviewed the lessons which we, as horticulturists, have had so clearly placed before us by the various exhibits of fruit at the World's Fair. He showed that in almost every instance, fruits which were natives of any section of country, were those best adapted to that district, and that, as a rule, exotics which had been bred under different conditions of climate and soil, were not a success. This he applied to the experiments which are being conducted in the introduction of Russian fruits.

In our opinion, there is a great deal of truth in the views expressed by Mr. Watrous. While we may find an occasional variety among the Russians which will succeed in Canada, and be of value to us, there is no doubt at all that the varieties, which are to be most successful in our northern section, will result from experimental work in raising seedlings of native varieties and hybridizing them with kinds already known.

BORDEAUX MIXTURE FOR THE MILDEW OF THE GRAPE.— On our fruit farm at Maplehurst we have a vineyard of about twelve hundred vines, and during the last five years the vineyard has been more or less affected with powdery mildew; the Salem has been affected more than any other variety; Brighton has been considerably injured; Wilder and Concord also to some extent. Each year we have applied flower of sulphur, scattering it freely through the vineyard upon the leaves and upon the ground. The result has been fairly satisfactory, but has not given entire immunity. During the past season Bordeaux mixture has been carefully applied to the whole vineyard, first before the leaves opened and afterwards two application at intervals of about a fortnight each. The result has been completely successful, scarcely a trace of the powdery mildew, or of brown rot, being observable. The latter in other seasons was very destructive to the Salem. At the same time, a young vineyard left unsprayed, showed indications of the presence of these diseases.

Question Drawer.

Bearing Capabilities of Certain Apples.

598. Sir,—Compared with such regular bearers as the Greening, what are the bearing capabilities of the Peewaukee, Walbridge, Sutton Beauty, Grimes' Golden, American Golden Russet, King and Ontario, when grown under favorable conditions? I ask this because I see myself that the Spitzenburg, which does well here, only bears one-third the weight of apples which the Winesap does, and, though better in quality, brings no more in the market.

J. L. Webster, *Vernon, B.C.*

The varieties named by our correspondent are none of them heavy bearers; indeed, the King is proverbial for being a scant cropper. The American Golden Russet produces a fair crop, but when fully loaded does, not yield one half as many barrels as the Greening. However, the fact that an apple tree is a light bearer does not condemn it. The King apple brings twice the price in the British market that the Greening does and, therefore, is more profitable, even if it yields less than one-half the quantity of fruit; and the same remarks will apply to the other varieties.

The following is the experience of other growers with these varieties :—

Prof. John Craig, of Ottawa, writes :—"I have found that on rather poor and gravelly soil *Pewaukee* does not bear heavily. Twenty trees of this variety, at Abbotsford, P. Q., now 18 years old, have not borne as much fruit as half that number of Wealthy growing alongside. *Wallbridge*, except on sandy soil, in my experience, has proved a very light bearer, and the fruit quite too small to compete with such apples as Peewaukee and Ontario. *McIntosh Red* does not bear as heavily as the Fameuse, but usually with satisfactory regularity. *American Golden Russett* has not proved as reliable in Eastern Ontario and the Province of Quebec as the English Golden Russett, which, after it has attained some size, say : in eight or ten years after planting, bears moderate and regular crops annually.

The fact that the Ontario apple is given to bearing young and very heavily was brought out at the Ontario Fruit Growers' Association, and on this account was likely to be a short-lived tree, unless cultivated highly.

I know of no instance where *King*, although a very desirable apple in many respects, can be called a profitable variety when grown on its own stock. While everywhere a favorite yet, it bears so lightly and is so uncertain, that returns are usually unsatisfactory,"

Mr. Nicol, of Cataraqui, writes :—I would state that the *Peewaukee* was introduced to this district only fifteen years ago. Hence, there are no large bearing trees of it hereabout, but from what I know of it, I am led to believe it is one of the most suitable kinds for this part of our country. The tree is hardy as the Duchess, bears early, fairly good crops of fruit, of good size, good quality, and which keep well; valuable for shipping.

Wallbridge—The tree is a hardy and vigorous grower, but the fruit is so uneven in size, that only a small proportion of it is marketable; it is unattractive and does not sell well.

Sutton Beauty—I have had no experience with it.

Grimes' Golden is not a great bearer here, but the fine quality and lovely appearance of the fruit entitles it to a good place in any orchard.

McIntosh Red is not a *great* bearer, but fruit is more attractive than any kind that I know of; no apple sells so readily in Montreal, or brings so high a price. It does not scab so much as the Fameuse, of which it, doubtless, is a seeding; as a desert apple it takes foremost place.

Golden Russet is a vigorous grower, does not early begin to bear large crops, but when the tree get age, it yields abundantly. At Mr. Allen's place at Alwington, I saw nine and a half barrels of good salable apples gathered from one tree. It is the only apple which one can rely upon keeping in good condition until middle of summer. Although of first rate quality it does not bring the highest price in the British market, because its color is not so attractive as some other kinds.

King is not hardier than the Baldwin or the R. I. Greening, therefore not much grown here. Twenty miles west of here, near the lake shore, it does very well, and in Prince Edward County is generally considered to be one of the most profitable kinds; although it does not yield such heavy crops as the Baldwin, it is a more regular bearer, and the fruit sells at higher prices.

The Ontario is not extensively grown hereabout yet—it seems to be on probation; but from what I have seen, I have formed a good opinion of it It is an abundant bearer, and the fruit is of nearly equal size; although not of the very best quality, it is superior to the Baldwin. The tree being hardy, is well suited for Eastern Ontario, and I have no doubt this apple will become more popular when it is better known.

Mr. Beall, of Lindsay, writes: The Baldwin and Greening are but little grown here, therefore cannot speak with certainty. The *Pewauhee* does well in this locality. The tree bears a good crop of large and beautifully-colored apples every year. Wallbridge and Sutton Beauty but little known here. Grimes' Golden gives excellent crops. Every grower should grow sufficient for family use, but its color and size is against its market value. McIntosh Red cannot be grown to advantage. American Golden Russet gives good crops. King, a very shy bearer. *Ontario* bears all any tree of its size should bear, and bids fair to become at an early day, one of the most popular apple grown in the province.

Plum Rot and Pear Scab.

599. SIR,—How shall I treat my plum and pear trees, in order to destroy the plum rot and pear scab? I lose a great deal of my fruit by these diseases.

A. W. BIGHAM, *Islington.*

The best remedy for plum rot and pear scab that is known is to apply Bordeaux mixture in the form of a spray. The first application should be made

before the leaves appear, and two others at intervals of two or three weeks during the early part of the season. Full directions will appear in this journal at the proper season.

From reports of the experience of those who have tried this remedy, which have appeared in these pages and in our reports, it would appear that some few have failed, but so many of us have had such evident success in lessening, if not entirely destroying, these fungi, that we have no hesitation to highly commending it to our correspondent.

Excrescences on Grape Vines.

600. SIR,—I send you a section of a diseased grape vine, on which is a seedling somewhat resembling the plum knot. Three years ago this appeared on one of my grape vines. T. NEELAND, *Port Hope.*

This disease is not serious. It has long been known in France as Broussins, meaning excrescences. They are the result of the action of the frost, and appear on the roots, first as little nodules, which are soft and spongy, but which become firm and hard and dry. On the branches they appear as masses of irregular excrescences, composed of a large number of shapeless nodules, and the wood thus covered is often enlarged four or five times its natural diameter. The bark is torn, and often stretched over irregular groups of these nodules. A full description of this appeared in Vol. 13, page 247.

Making an Asparagus Plantation.

601. SIR,—Is there any profit in growing asparagus, either in the garden or in the field? How should it be planted, and after planting can it be cultivated with the plough? What treatment should it receive afterwards, and when is the best season to make the plantation? H. BEAUDRY, *Montreal, Que.*

Of all the crops for the market garden, especially if conveniently situated to a large city, asparagus is one of the most satisfactory, because it is easy to cultivate, easy to gather and easy to sell. The land should be heavily manured and worked up to a depth of at least ten inches. Trenches are then opened up to a depth of nine inches with a plough. The plants should be set about three feet apart in these trenches, and enough earth packed about the roots to cover them well, and the harrow will complete the job, throwing in a little additional earth upon them, as it is drawn lengthwise over the rows. This work may be done in the fall or spring. At the end of the season the trenches will be partially covered in and during the next year may be all cultivated level, leaving the roots eight or nine inches below the surface of the ground. Every spring the whole surface should receive thorough cultivation with the plough and harrow, and be well manured. Mr. Garfield, of Michigan, who has had eminent success in growing asparagus, states that he applies stable manure and refuse salt alternate years, the former at the rate of thirty-two tons per acre.

Ploughing or Mulching an Apple Orchard.

602. SIR,—I have a small orchard, ten years planted, which has been seeded for three years with clover and timothy. The trees are rather close together to allow of breaking up the ground easily. I have put on a heavy dressing of manure ; and would like to know whether you would advise me to plough it under, or simply give it a good harrowing. J. D. OLIVER, *Bobcaygeon.*

Where practicable, there is no doubt that the best treatment any apple orchard can receive is frequent cultivation with both plough and harrow, because in this way, not only is the manure better mixed with the soil, but the fertilizing elements already in the soil are rendered more available by the roots of the trees. Besides this, many soils become too closely packed for the beneficial action of the air to be exerted upon, unless occasionally worked up.

However, in the case before us, it is quite possible that in a small orchard, a sufficient quantity of manure could be applied to mulch the surface and keep it moist. The test will be in the growth of young wood at the tips of the limbs. So long as there is an annual growth of a foot or so, the orchard is in sufficient vigor, and needs nothing in the way of fertilization, or cultivation.

Small Fruits, Cultivated or Wild.

603. SIR,—Would you advise me to grow small fruits ? I am situated in a section where there is any quantity of wild fruits, with a small town on each side, and no opposition. I am a beekeeper, and am fond of fruit growing. J. D. OLIVER, *Bobcaygeon.*

Cultivated fruits are usually so much superior to wild, at least in size and appearance, that there is always a demand for the former at higher prices. No doubt that our subscriber would find it a material help to his income, were he to plant a half-acre of strawberry plants ; a half-acre of red and black raspberries ; a half-acre of blackberries ; a half-acre of currants and gooseberries, more or less, according to the size of the towns which will be his markets.

What is a Shrub ?

604. SIR,—What is a flowering shrub ? Are Clematis Jackmanni, and Aristolochia Sipho, shrubs ? A SUBSCRIBER.

A shrub is a woody plant of less size than a tree, usually with several stems. If the extreme height of a plant exceeds twenty feet, for example, it would be called a tree and not a plant. The stems of Clematis Jackmanni are sufficiently woody to class it among the shrubs, and so are those of Aristolochia Sipho.

Spraying.

605. SIR,—What is the best solution to spray with before leaves open?
G., *St. Thomas.*

Probably there is nothing better than sulphate of copper, one pound to twenty-five gallons of water.

Hardy Peaches.

606. SIR,—What are considered the three hardiest peaches? G., *St. Thomas.*

Perhaps Crosby, Hales' Early, and Hynes' Surprise. The Elberta and Hill's Chili are also classed among the hardier kinds.

Grapes for St. Marys.

607. SIR,—Please give me a list of varieties of grapes suitable for this section.
J. BONIS, *St. Marys.*

Some good varieties are, Black—Moore's Early, Worden and Concord; Red—Lindley, Delaware and Brighton; White—Lady, Niagara and Diamond.

Age of Grape Vines.

608. SIR,—Is it better to plant grape vines three years old, or younger?
J. B., *St. Marys.*

Two years old is a suitable age for vines to be planted. If older, they lose too many fine fibres in removal, and are much stunted. We would prefer one year old vines to three year old ones.

Soil for Grape Vines.

609. SIR,—I have two fields, with limestone gravel bottoms; but in one the gravel is near the surface. In which would it be best to plant?
J. B., *St. Marys.*

We would prefer the deeper soil, with the gravel not too near the surface.

Ginseng.

610. SIR,—I wish to obtain seeds or plants of ginseng, suitable for planting. Could you refer me to any party who would be able to supply them?
ORIGEN MARTIN, *Webster's Corners, B.C.*

It is found in the Niagara district. Who will furnish plants to Mr. Martin?

PARLIAMENT BUILDINGS, OTTAWA.

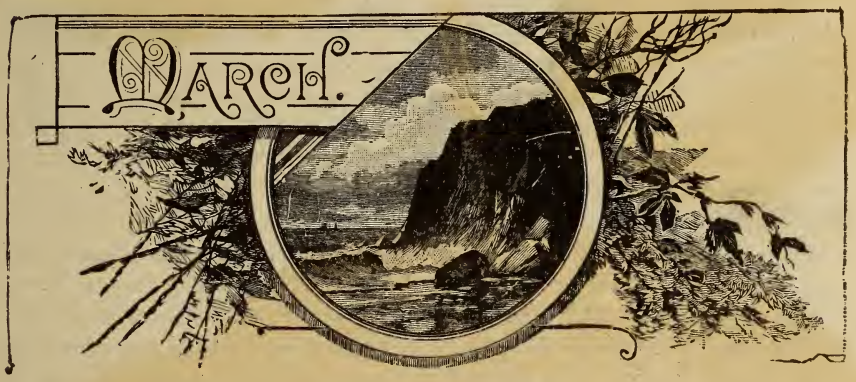
FROM THE RIVER.

GRAVENSTEIN.

THE

Canadian Horticulturist

Vol XVII. 1894. No. 3.



THE GRAVENSTEIN APPLE.

HERE are two or three fall apples which seem to compete for the first place for profit in Southern Ontario, viz.: the Blenheim Orange, the Ribston Pippin and the Gravenstein. The Blenheim Orange is hardier, and on this account preferable for Central Ontario; it is also a little better keeper, and therefore classed by some as an early winter apple. The apple growers around Peterboro' consider the Blenheim one of their best for the British market. The Gravenstein is not quite hardy enough to be grown in that district. Mr. Beall, of Lindsay, writes concerning it: "I know of only two trees of the Gravenstein in this vicinity. They are about ten years old and commenced bearing about three years ago; they were very healthy trees up to that time. The crop produced was small. They are now dying out at the top and will probably last but a very few years. The fruit produced last year was very large and beautifully colored. From my present knowledge of the tree, I would not recommend it for planting here, except for experimental purposes." Mr. Nicol, of Cataraqui, writes: "As concerning the Gravenstein apple, it has never succeeded here. I know of many trees having been planted, yet I do not at present know of one bearing tree in this district. I think it is not hardier than the Rhode Island Greening."

Mr. A. McD. Allan writes :—"The Gravenstein is our best all-round apple for its season, either for dessert, cooking, local or export, and is hardy enough to be successfully grown well north of Toronto. There is money in it, being one of the highest priced in any market; a thrifty grower, early and regular bearer."

In Southern Ontario, however, the Gravenstein is perfectly hardy. At Maplehurst we have four large trees, thirty years planted, which produce an annual crop of the largest and finest samples of Gravenstein that can be grown anywhere. We have gathered them in September and forwarded them to London, where they sold at the top of the market. There is no doubt it would pay well for growers in the Niagara district to plant this apple freely for export purposes. We ought at least to agree together upon those varieties which are the best and most profitable of their respective seasons, and then produce those kinds in larger quantities, in order that our district may become famous in the markets of the world for certain apples of high quality, for each season. Already our King, as a mid-winter apple, brings us a high reputation, and Nova Scotia has become famous for her Gravensteins; so much so, that the Boston and New York buyers compete with the buyers for the British markets in the very orchards, for these famous apples. It was the fine showing of a dozen barrels of beautiful Gravensteins at one time that gave the Nova Scotia fruit exhibit such prominence at the World's Fair, under the careful management of President Bigelow.

The Ribston Pippin is one of the finest apples that grows, but not equal to either of the above in showiness, and the tree with us, at Maplehurst, does not attain more than half the size of the Gravenstein. It lacks its vigor, and consequently is unable to carry an equal load of fruit.

The Gravenstein apple originated in Gravenstein in Holstein, Germany, and is counted one of the finest apples of Northern Europe. We append Downing's description :—Tree very vigorous, spreading, forming a large, broad head. Very productive. An early bearer. Young wood reddish brown. Fruit large, rather flattened, and a little one-sided or angular, broadest at the base. Stalk quite short and strong, deeply set. Calyx large, closed, in a wide, deep, rather irregular basin. Segments long, irregular, recurved. Skin greenish yellow at first, but becoming bright yellow and beautifully dashed and pencilled, and marbled with light and deep red and orange. Flesh tender and crisp, with a high-flavored, somewhat aromatic taste. Very good, September and October. A valuable apple for market or cooking, succeeding admirably wherever grown.

Soil for Strawberries.—A very rich garden spot, or any soil highly charged with humus, stimulates a too vigorous plant growth at the expense of a good yield of perfect fruit. In addition to the extra expense of having to "work the plants to death" to keep down weeds on such a soil, here is where the plants first begin to sicken and to die during the long and sometimes very dry summers of this latitude.—Miss. Exp. Station.

PROMINENT CANADIAN HORTICULTURISTS—XXIII.

J. W. Bigelow, Esq.

THE subject of this sketch was born in Canso, Guysborough Co., N. S., in 1833; here he resided till 1869. He conducted a large and successful shipping business in Canso for a number of years, accumulating a large property. In 1869, Mr. Bigelow, attracted by the natural beauties, and superior educational advantages of Wolfville, King's Co., purchased a small farm at the west end of the town, where he has since resided; and there are but few residents of Wolfville and vicinity who have not the most pleasant recollections of hospitality received at the hands of Mr. and Mrs. Bigelow, at Spruce Bank.

Soon after coming to Wolfville Mr. Bigelow planted an orchard of some two hundred trees on his farm; these trees were for some years neglected, and, like most orchards planted at this date, a mistake was made in setting many varieties which have since proved almost worthless, necessitating re-grafting or re-planting many trees; notwithstanding these disadvantages, as well as the severe gales of August last, which stripped off a large part of the crop, this orchard produced $800 worth of apples this past season, demonstrating beyond question, the truth of previous statements made by Mr. Bigelow, as to the profit of orcharding in the Annapolis Valley.

Becoming a life member of the Association in 1875, Mr. Bigelow has been an enthusiastic attendant of all meetings of the Society, and in 1887 made a statement in the annual meeting of the cost and value of an orchard ten years old, from the standpoint of a business man, which has attracted much attention. Some five years since Mr. Bigelow acquired a large tract of land near his farm, and has given further evidence of his faith in orcharding, by planting some forty acres of virgin soil with apple trees of the leading commercial varieties. This plantation is doing finely, and it is Mr. Bigelow's intention to double its extent in the near future.

At the annual meeting of the Association in 1890, Mr. Bigelow was elected President, and has been unanimously re-elected each succeeding year. Mr. Bigelow took an exceedingly active interest in the exhibit of Nova Scotia fruit at the Columbian Exposition, sparing neither time nor money in the effort to make it a success. He personally took charge of the exhibit during October, 1893, and the show and the gentleman in charge won most flattering enconiums. Indeed, much of the success which N. S. fruit attained at the Fair is due to the unflagging energy of the President of the Association.

The Horticultural School, recently established by the N. S. F. G. Association, has also received much attention from Mr. Bigelow. His has been the

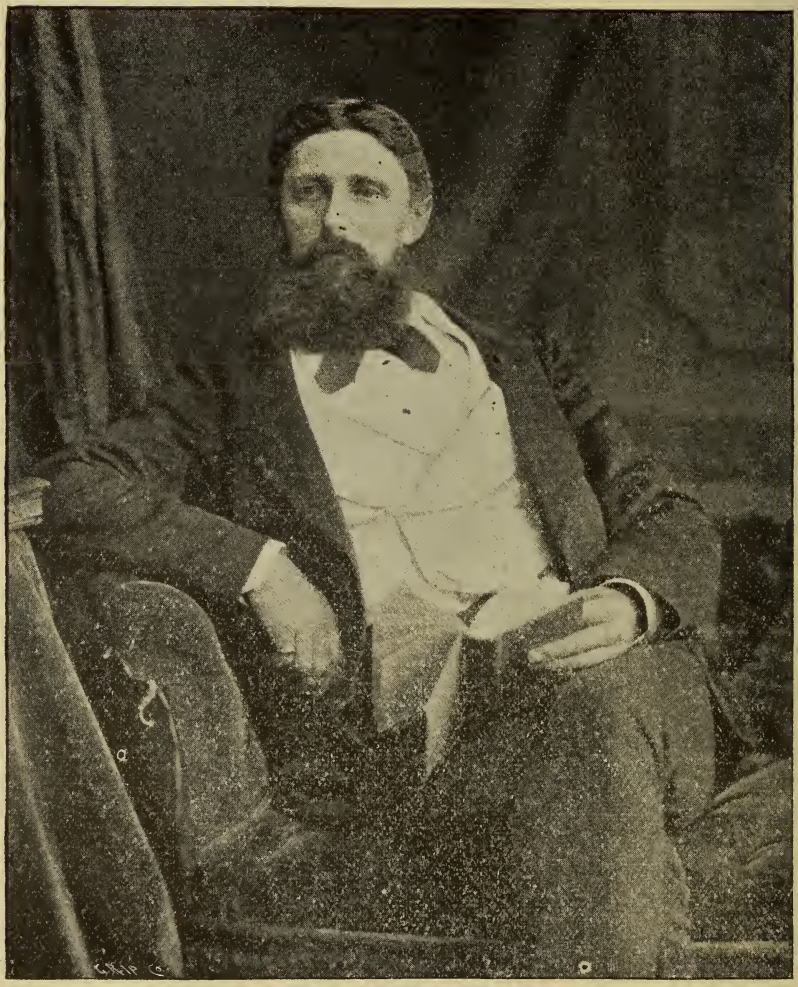


FIG. 424.—MR. J. W. BIGELOW.

master mind guiding and developing the scheme for horticultural training, till the inception of the school is an established fact. During the few years Mr. Bigelow has sat as President, the Association has increased from less than one hundred to more than five hundred members, and the honored institution has assumed a vigor and energy that bids fair for increased usefulness, and it is the expressed hope of many members that the subject of this sketch may long fill the Presidential chair.

THE APPLE LEAF BUCCULATRIX.

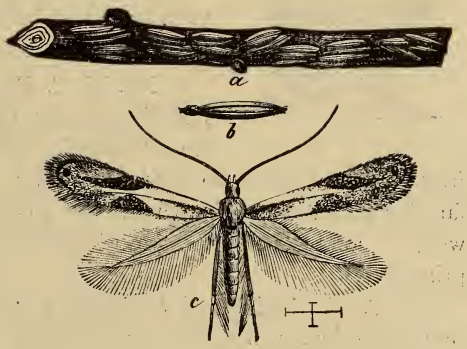


FIG. 425.

At the meeting of the Brant Horticultural Society at Paris, a fruit farmer, Mr. John McRuer, of Ayr, showed some twigs from his apple trees covered with small, elongated chrysalids. The larva, he said, was so numerous in his orchard, that they did very much damage. On forwarding some samples to Prof. Jas. Fletcher, he replies as follows :

"The apple twigs enclosed in your letter, which had been handed to you at the meeting of the Brant Fruit Growers' Association in Paris, are infested with the apple leaf Bucculatrix, *Bucculatrix pomifoliella.* The white objects on the twigs are the cocoons of the second brood. The perfect form of this insect is a beautiful little moth, which is figured on page 119 of Saunders' "Insects Injurious to Fruits," where the cocoons are also shown upon a twig. The moth appears in May, and the small caterpillars are occasionally so numerous as to cause considerable injury. There are two broods in the year. Probably the most practical remedy for this insect is spraying the trees, after the flowers have fallen in spring, with one pound of Paris green, one pound of freshly slaked lime and 200 gallons of water."

A Big Apple Story.

SIR,—I believe you have asked the question, What is the largest crop of apples you know to have been taken from a single tree? and having knowledge of what I think an extraordinary crop, I have for some time intended writing you regarding it. Mr. Summerfield Douglas, who is now manager of the Kay Electric Works in Hamilton, but who, ten or twelve years ago when this occurred, was living on the Douglas homestead, Burlington Plains, lot 3, con. 1, E. Flamboro', will tell you that at that time he had a tree of Maiden Blush which yielded thirty barrels. Although a twenty-six foot ladder was used in picking, a portion of the crop had to be left on the tree as it was quite out of reach. There were twenty-two barrels of first-class apples and six barrels of seconds, which, together with the cider apples and those remaining on the tree, would make up the quantity named. The net proceeds from this crop was between fifty and sixty dollars.

GEORGE E. FISHER, *Freeman, Ont.*

FRUIT GROWERS OF WESTERN NEW YORK—I.

Profit in Fruit Growing—Pruning Evergreens—Co-operative Storage of Apples, etc.

PROBABLY there is not a larger or more enthusiastic meeting of practical fruit growers than the one which takes place every January in the City of Rochester. True, we have four or five times the membership, but as we meet in so many different places we cannot expect such large numbers to attend as if we held all our sessions in some centre of fruit culture.

Mr. W. C. Barry, the able President, gave an admirable opening address, in which he maintained that, notwithstanding the present discouraging outlook for fruit growers, there is no good reason why farming and fruit growing should not pay well, if conducted on correct business principles.

FIG. 426.—W. C. BARRY.

Mr. C. W. Garfield, of Michigan, was present, and gave an address on "The Art that doth (not) mend Nature," in which he condemned the senseless method of pruning, by which evergreens are robbed of their native grace, and made to assume the form of elephants, lions or eagles. Such monstrosities he compared to the compression of the Chinese woman's foot, or of the American woman's ribs, and condemned them. Mr. Pierce, of Ohio, believed there were cases in which cutting back evergreens was advantageous. In city lots evergreens could in this way be kept within bounds; the leader may be cut out every other year, and when new foliage is pushing out each year he would pinch out the leading bud—thus forming a thick, close, oblate-shaped tree—occupying little ground, and presenting a pleasing aspect.

Co-operative storage.—Mr. Perkins, of Newark, N. Y., who grows apples extensively, drew attention to the fact that Canadian and California apples are filling the American markets. He knew also of a Missouri apple orchard yielding 16,000 barrels in a single season, and another western orchard yielding 20,000 barrels, and, unless conditions are changed, how can we market our

apples with profit? Evaporators have done wonders for the fruit crops in certain counties of New York State, but the true solution of the problem was in constructing co-operative cold storehouses, that could hold from 10,000 to 20,000 barrels of apples each. There the fruit could be kept until markets were bare, and shipped where prices were satisfactory. Possibly such large storehouses would even bring foreign buyers. Apple growing should pay better than orange growing. In all the best markets of the world a good red apple brings more money than an orange. The Nicaragua Canal will knock the bottom out of California orange growing, and apple orchards will pay better than orange groves, if properly handled and sold.

Are novelties worth their cost? was the suject of an address by Prof. Bailey, who answered affirmatively, because old varieties of fruits are constantly being crowded out by new ones; not because the old run out, for they may be propagated indefinitely by grafting and slipping, but because the new are better, being required for various conditions of climate and soil. Novelties must pay, therefore, if horticulture is to pay; not all of them, of course, but a certain percentage. The older the type, the less hope for improvement from seeds, sowing and hybridizing, and less in old localities than in new, because in the former this line has already well worked out.

In what consists the injury to roots of dormant trees by freezing? was a question answered by Prof. Beach, to the effect that, in freezing, the crystals of ice formed outside the minute cell-walls—drawing the water slowly from the interior of them; but, in *sudden thawing*, the water was set free too rapidly to be reabsorbed, and hence the injurious effects.

The value of the Abundance and other Botan plums for general planting, was discussed. The Botan is a general name for a family of plums from Japan, and the Abundance is one of them. Mr. S. D. Willard had tried them and was convinced they were worth planting, still he advised further testing before planting largely. The Burbank is better than the Abundance, and so is the Yellow Japan. The class is valuable, productive and hardy, and has a good market value; other classes bloom too early and are often cut off, or otherwise injured. Some people like the flavor of the Abundance and consider it equal in quality to Lombard; the skin is thin and the fruit must be handled carefully. These plums are little affected with the knot, but are equally subject to curculio, with other plums.

The Burbank is not an early ripening plum; Mr. Willard exhibits it in September. He had enough confidence in it to plant four hundred trees. The Ogon is the poorest of the lot in quality. No one cares to eat it out of hand, but canned, it is very fine. In Japan they eat these plums green, while the pits are still soft.

Mr. J. H. Hale thought there was great promise in these Japan varieties, because they were better shippers than the European varieties, beautiful in appearance, and good enough in quality; except the Ogon, which he humorously compared to a cross between a Kieffer pear and a seed cucumber.

QUINCE CULTURE.

SIR,—Please give me some information about growing quinces. Are quinces grown successfully in Canada? What are the principal requirements for growing them profitably? Is there much demand for the fruit? Kindly name a few of the leading varieties.

QUINCE, *Montreal.*

ON page 97, volume 14, will be found an article in which the most of the questions asked by Quince are answered. In brief we may say that quinces can be quite successfully grown in Southern Ontario. They require a deep, rich soil, and good cultivation, in order to secure the best results. Usually they are neglected and become stunted in growth, and matted with interlacing branches, as shown in Fig. 427. Under such treatment the trees produce little fruit, and are unprofitable. Not only should they have the best cultivation, but also annual dressing of stable manure and wood ashes. They should be planted about 10 feet by 15 feet, thus allowing cultivation with horses in at least one direction, after they attain full growth. Some plant 8 x 10, but unless severely cut back this is too near. Fig. 428 shows a quince tree properly pruned. Some

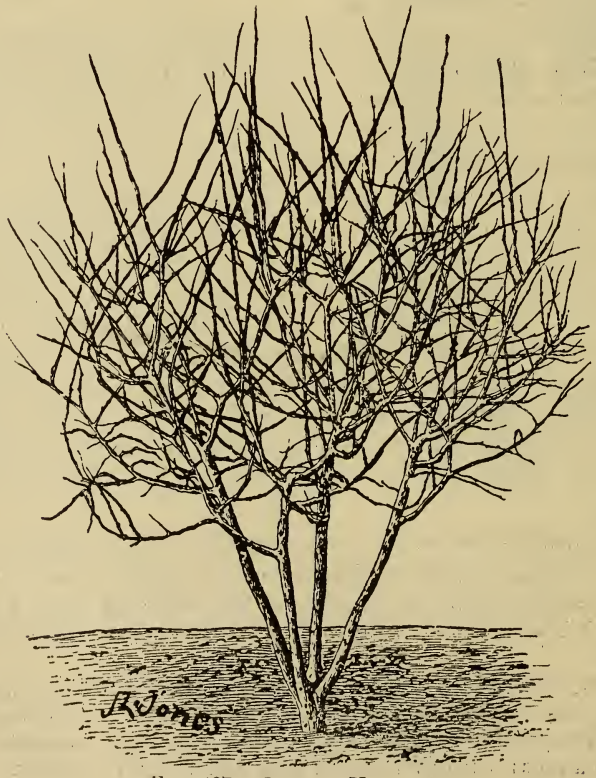


FIG. 427.—QUINCE, UNPRUNED.

allow it to grow several stems, but the tree form is best, and this well thinned. Besides this, the new wood should be annually cut back, leaving only four or five buds.

The quince is easily propagated, either by layers or cuttings. The latter may be made from the young wood cut at the annual pruning; this should be cut in lengths five or six inches long, which should be buried in the earth until planting time. Then set them in the rows three or four inches apart, with one bud above the surface, and the rows about three feet apart, in two or three years they will be ready for the orchard.

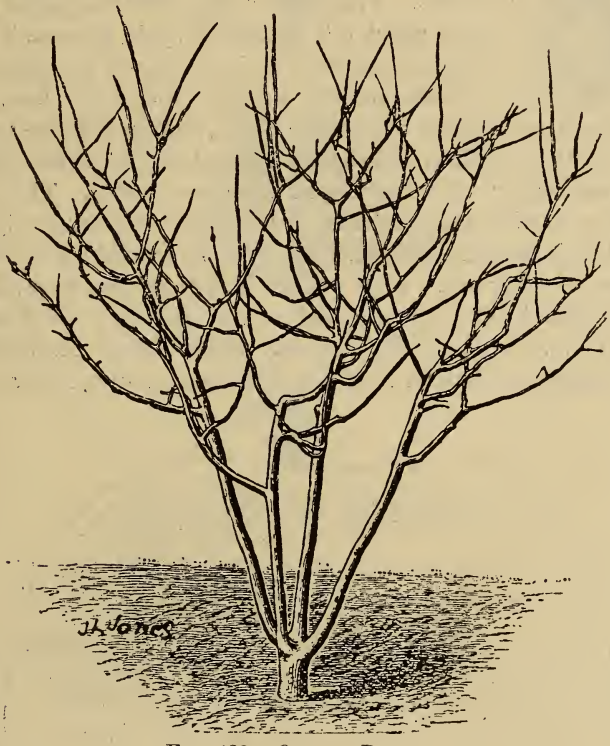


Fig. 428.—Quince, Pruned.

There is but a limited sale in any market for quinces, yet, in our opinion, with an increase of the supply, a larger number of people would use them. No fruit excels the quince for preserves, jellies, marmalades, and flavorings for apple tarts. The price varies with the supply. Sometimes our shipments from Maplehurst bring quite as much as pears; at other times, an abundant crop in New York State seems to fill our market, and brings the price down to about one-half.

The quince is indigenous to Southern Europe, and gets its botanical name, Cydonia vulgaris, from a town called Cydon in Crete. There are several varieties, but very few that need to be mentioned as leading ones, *e. g.*, Orange, Rea's Mammoth, and Champion.

THE NORTH-WEST GREENING.

ONE of the most promising varieties of apples shown on the tables of the State of Wisconsin at the World's Fair, after the Wealthy, was the "North-West Greening." The reports of this comparatively new variety are very encouraging. It originated in Waupaca county, Wisconsin, about twenty years ago. It is one of the best of the numerous Waupaca seedlings. I have taken the trouble to gather some information about this promising apple, because it is some six or seven years since I first procured root-grafts of it from Wisconsin, and the trees are very hardy here, and I was much impressed with its fine appearance and quality as exhibited at Chicago.

"The North-West Greening originated (says Mr. J. C. Plumb) about twenty years ago in a township where few apples have ever grown. The old tree was killed by heavy bearing and hard cutting of scions. Unfortunately, it fell into the hands of an inveterate crank, who blew his horn in season and out of season, to the disgust of every one. I got a few scions from him about fifteen years ago. I soon found out its great merit as a nursery tree, and scattered it by thousands all over the West, and it is now sought after as never before. It is not hardy enough for Northern Iowa and Minnesota prairies, *except on the bluffs.*

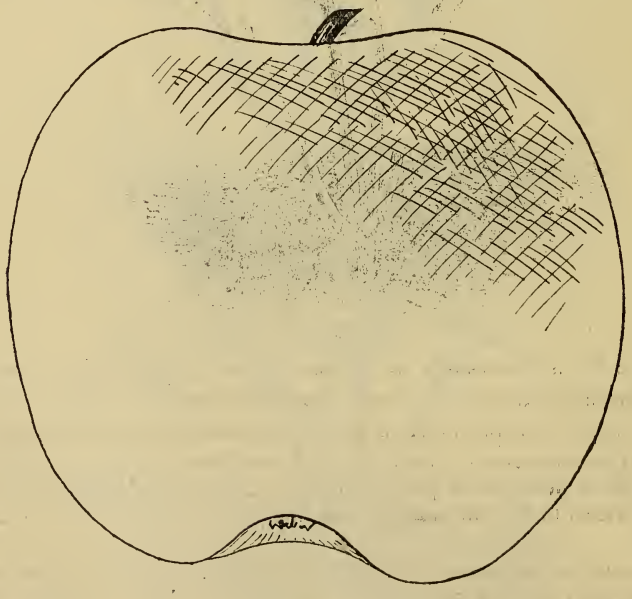


FIG. 429.—NORTH-WEST GREENING

In very rich soils, it grows too late to be perfectly hardy. But here, in all southern and eastern Wisconsin, and Michigan, it is doing finely. Prof. Budd was sure it was of the 'Anis family' and had 'Russian blood in it,' but afterwards went back on it."

Six years' trial of the North-West Greening in this province has convinced me that we have in it a valuable acquisition to our late winter apples. The

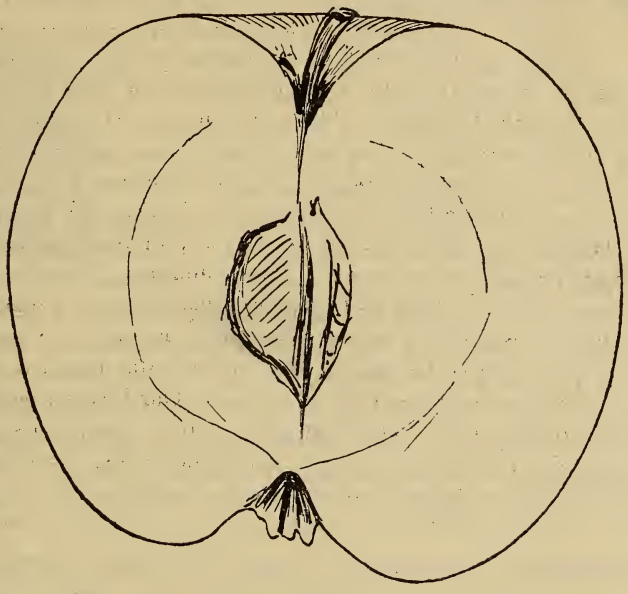


FIG. 430.—NORTH-WEST GREENING, SECTION.

fruit is certainly fine; size, medium to large; color, yellowish green, with creamy blush on sunny side; roundish oblong. Flesh, yellowish white, tender, sub-acid, juicy, crisp, pleasant. It is a fine cooking apple, handsome and symmetrical. The North-West Greening is worthy of cultivation in this province and Eastern Ontario, where the Rhode Island Greening cannot be grown successfully, and it promises to be a competitor of that admirable apple. The North-West Greening keeps till June.

Montreal, P. Q. R. W. SHEPHERD.

Big Strawberry Crops.—Strawberry culture has become a specialty with a great many, and financially a great success. Judge Miller, of Missouri, raised 17,000 quarts per acre; Smith, of Wisconsin, raised at a rate of 400 bushels per acre; Derrand, of New Jersey, raised at a rate of 20,000 quarts per acre; Arnold, one of the successful growers of Ohio, feels satisfied that he raised 150 bushels on the average per acre.—Strawberry Culturist.

NOTES FROM BRITISH COLUMBIA.

THE Fruit Growers' Association and Horticultural Society of British Columbia held their annual meeting in the City Hall, New Westminster, January 24th, 25th and 26th, President Kirkland in the chair. Many members and others were present from all parts of the Province. Several papers were read and questions of interest discussed. In the election of officers for current year, John Kirkland, Ladner's, was re-elected President; A. H. B. MacGowan, Vancouver, Secretary.

A Fruit Growers' Convention will be held at Spokane, Washington, on February 14th, and the following States, as well as British Columbia, will be represented, Oregon, Washington and Idaho. It is proposed to meet railway officials and discuss rates, also it is expected that commission men will be there from New York, Chicago, St. Paul, Minneapolis, Omaha and Winnipeg. The following are some of the papers and subjects for discussion: "Picking, Packing and Grading of Fruits and Shipping to Through Markets," led by E. L. Goodsell, New York, and G. W. Barnett, Chicago. "Our Insect Enemies, and the necessity of more Radical Legislation to increase their Destruction." "Bees," "Hop Culture," etc. The following are the British Columbia contingence as appointed at annual meeting, President Kirkland, G. W. Henry, Heatzie; J. A. Sharpe, Agassiz; R. M. Palmer, Victoria; E. Hutcherson, Ladner's.

So far everything is favorable for a good fruit season this year. Eight degrees of frost is the coldest we have had on the coast. Our fruit growers are busy pruning and spraying, and getting ready for the coming crop.

Ladner's, Feb. 3rd, 1894. E. HUTCHERSON.

Limits of Quince Culture.—I think, in Ontario, that a line drawn from Sarnia to Toronto would form the northern boundary of quince culture in the province, and south of this line there no doubt would be included many points where the cultivation of the quince would be attended with much difficulty.

There is no portion of the Province of Quebec in which it can be grown without winter protection. The quince will be cultivated in King's Co., Nova Scotia, to a greater extent in future than in the past. It will also succeed over considerable areas of Western British Columbia.

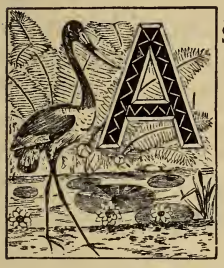
Ottawa. JOHN CRAIG.

Mrs. John Laing is a soft pink-colored rose with large and finely formed flowers, with high center. It is a continuous bloomer until frost, almost as free as Gen. Jacqueminot, and a good grower, with upright stems, besides, it is quite hardy. This is one of the best of modern roses.—Gardening.

CONSTRUCTION OF AN EVAPORATOR.

SIR,—Is there an evaporator manufactured in Ontario? How is sulphur applied? Is it sprinkled on the apples, or burned in a vessel under them? About how much duty would we have to pay on an evaporator which costs in the States, say, $30?

GEORGE MARSHALL, *Clarksburg.*



S we have stated before, there is no factory in Ontario, so far as we know, where evaporators are constructed ready for sale. The duty is 30% ad valorem. It might be interesting to some of our readers were we to repeat the description of an easily constructed evaporator, which was described in the HORTICULTURIST for 1891. (See Fig. 431.)

"It is built of wood. All the frame required is the upright, 2 by 2 inch posts and the 2 by 3 inch horizontal drawer rests. The drawer rests are placed flatwise and between the posts, rabbeted one-half inch on each inhalation of air. The end drawers are 4 inches deep and 5 feet long, and are used to finish on. Have four extra drawers, and have some extra front pieces to put in and close up the openings when the drawers are out. The sheet-iron fenders, A B, extend the whole length, to distribute the hot and cold air. The cold air enters the ventilators below A, and is divided by B. The arch C is sheet-iron, with a two inch flange, resting on the wall of the furnace, which is two feet high and two feet wide, laid in mortar. The top course of brick is laid in mortar, in the flange, to prevent the

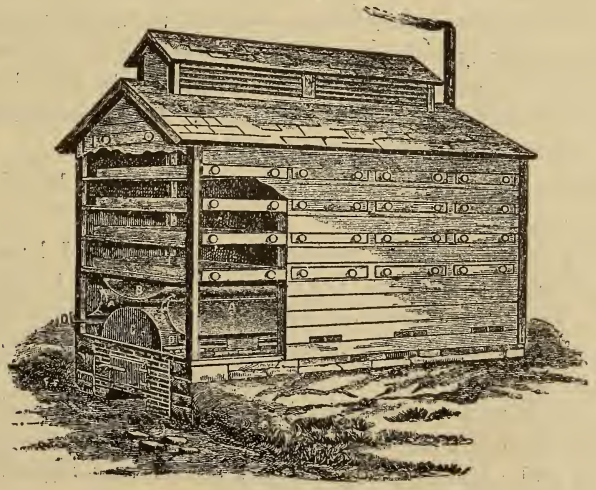


FIG. 431.—HOME-MADE EVAPORATOR.

escape of smoke. The building is 10½ feet long, 7 feet high, and 4 feet wide. D D are connecting rods attached to the ventilators. The furnace can be built below the surface, on sloping ground. The amount of heat is great, and the thing to be observed closely is to admit plenty of cold air through the ventilators. The illustration, without going into details, gives enough to enable a good workman to construct a cheap and good evaporator that will do more than twice the work of some of the high-priced machines."—Farm and Fireside.

A writer in the California Fruit Grower says: "For sulphuring the fruit contained in a box 8 feet high by 3½ feet square, two heaping tablespoonfuls of powdered sulphur, sprinkled upon a live coal and burned on a pan set on the stove, with lower draft open and hood door closed, is sufficient. From twenty to thirty minutes is as long as the fruit should remain exposed to the sulphur fumes. Sulphuring preserves the bright rich color of apricots and peaches and the whiteness of apples and pears, but over-sulphured fruit retains a sulphur taste to an offensive degree."

Mr. Graham, of Belleville, says in a letter just received: "There are no fruit evaporators on a small scale made here. We have been selling one of American make, ranging from $25 to $50; but if the people of Ontario should need them in sufficient quantity, we could make them here at considerably reduced prices. My opinion is that such evaporators will not pay. It would be better for the neighbors to form a joint-stock company and purchase a steam evaporator. If there is a good locality in any section of Ontario where the farmers should desire such a one, I will be only too glad to build one myself, or build one for them."

Mr. A. M. Purdy, of Palmyra, N. Y., who has had some experience in this line, writes: "For sulphuring fruit, I use a long bleacher box that holds six bushel drawers, one following right after the other, and the pipe running into the smoke pipe of the evaporator, going out of the back end of the bleacher box, and a cup with sulphur constantly burning in the front end. Some persons burn the roll brimstone in the evaporators themselves."

We here give the drawing of the section and ground plan of Mr. Purdy's home-made evaporator.

I give a plan for a house costing about $50.00 that I have had in use more or less for eight years. Fig. 432 shows the plan of the heating furnaces—the outer lines being the exterior of the house. D, D are the furnace doors, through which access is had to the furnaces, F, F, which are made of sheet iron, half round, and are each about ten feet long, and fifteen inches in diameter. The smoke and hot air passes through them, and through the horizontal pipes, P, P, which are about five inches in diameter, into the brick chimney, C, standng against the end of the building. There should be a register in the pipe next the chimney, to control the heat.

The house (Fig. 433) is 7x10; posts 7 feet high; drawers No. 1—3 feet wide, 8 feet 4 inches long—eight drawers on a side. They are made of inch and a half pine for the end and back—the front is 1 x 4 inches. The bottom of the drawers are covered with common sheeting tacked on well with nails—2, 2, 2, are shelves, made tight, and 7 inches apart, and to come within ten inches of the sides of the house. 3, 3, are the furnaces; they are made of sheet iron, half round, and laid on brick arches, and are the whole length of the house; the chimney is on the outside. The sheet iron should be made of No. 4—with a flange, so that one course of brick can be laid on the flange, to make it smoke tight.

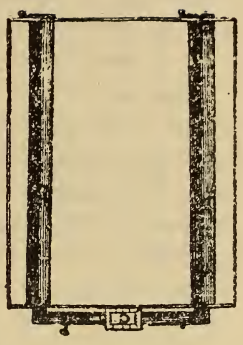


FIG. 432.—HEATERS, ETC.

The drawers should be made all alike, so that if you wish to change them from top to bottom, they will fit anywhere, and they should be made to fit tight, so that when they are all in they will make the sides of the house tight. The shelves 2, 2, 2, etc., are to distribute the heat to all the drawers; the heat will strike the first shelf, and pass to the side of the house, and thence under the first drawer to the centre, and then over the drawer, and then the other, etc., till it gets to the top. The drawers, as you will see by the drawing, is put in from the outside of the house and in the centre of the space between the shelves; 5 is a drawer 6 inches deep, 5 feet wide, and 6 feet long, to be used as required —good to use to finish fruit when in a hurry.

6 is a ventilator, the space in the roof 8 inches wide. No. 7 is a box, open at each end, to let in cold air—placed between the furnaces, so that the air will be heated in passing over them. The temperature of the house should be kept a little below the scalding point; if it should get too hot the lower drawers can be pulled out about six inches, and that will let in a draft of cold air, and soon bring down the heat to the desired point. Small pulpy fruit should not be more than three-fourths of an inch thick, for if thicker, the air will not pass through the fruit; and it will not dry so quickly.

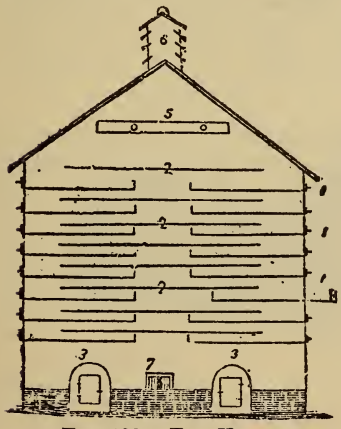


FIG. 433.—END VIEW.

After the fruit has become partially dried, put three or four drawers together and finish up. The advantages of the house are: 1st. You dry quickly and save time. 2nd. You keep off flies and moths, and you don't get any moths' eggs. 3rd. Your fruit is of better color and flavor, for you dry so quick that the fruit does not become sour. The cleats that the drawers slide on should extend outside of the house two or three feet, so that they can be filled if necessary without taking down. Put a piece of sheet iron over each furnace, say 6

inches high, to protect the first shelf, for if a careless attendant should build a very hot fire it might burn the shelf. The house can be built larger or smaller, so as to meet the requirements of any fruit grower.

Between the two fire doors is placed a wooden box or square tube (not shown in the cut), running lengthwise horizontally through the house, with sliding doors at the ends to regulate the current of air, and with holes along the top. This supplies fresh air, as it is heated and passes upwards. It regulates the temperature and prevents the fruit from cooking. The house may be larger or smaller than the diminsions given, according to the amount of fruit likely to require drying.

QUICK GROWING TREES.

I NOTICE that Mr. W.W. Smith, of St. Catharines, in his article on "The West Wind," in the January number of the HORTICULTURIST, speaks of some of the varieties of the willow as being "by far the quickest growing of all our trees," and for this reason, he recommends them for planting for wind breaks. I like his article, but not the willow. It is not a good, erect grower, is a great harbor of insects and worms. It is very dirty in spring from its catkins, makes great dirt at all times from dead small twigs, etc., and its roots are liable to fill and stop drains. I would sooner recommend the basswood, a native of our forests, a very rapid grower, and very valuable as a honey-producing tree, making the air heavy with the rich perfume of its blossoms late in June, when the season of most flowers is past. I would also recommend as fast growing trees, our native tulip, or whitewood, or a still more valuable and easier transplanted—the white ash. But the tree that outstrips all others for fast growing belongs to the much despised poplar family; but, unlike its much despised relatives, it is a beautiful spreading tree, with broad dark green leaves that hold their lustre through the most severe drought that we have ever had. It is the Carolina, or, as we call it here, the broad-leaf poplar.

I have had as a common growth, the second year from transplanting, ten feet, and last year I measured two cases of thirteen feet growth, corresponding side branches, etc. One tree, measured in girth, gave twenty-seven inches, four feet from the ground, five years from transplanting—a whip then. I have not cut up any of them, but the wood in large limbs that we have occasion to cut, seems very hard (for poplar) and capable of taking on a good polish. The tree stands erect and is in every way a fine-looking one.

Port Huron. L. B. RICE.

HOW TO MAKE A HOTBED.

A Hotbed.

IT is a box or frame without bottom or top, made for one, two or four sash, as in the illustration. It may be made permanent of brick or stone, or temporary of plank or one inch common boards, the back board about twenty inches high, one-half greater elevation than the front, which should be twelve to fourteen inches—the whole made to support a sash or several of any dimensions, the best of about three by seven feet. The back being higher than the front gives a declivity to the sash, thus casting off the rain, which it would not do if flat. The box at proper season is placed upon a bed of fermenting material, which, making a gentle and continuous heat, warms up a layer of soil resting upon it, and thus germinates seed and forces plants into rapid growth.

MANURE.—The value of the bed depends principally upon the character of the fermenting material. This should be rich stable manure (no cow dung) forked over two or three times at intervals of a week and kept in a deep and compact pile till it begins to smoke or steam, indicating that the process of fermentation has set in. If the dung be very rich in grain an addition of forest leaves is desirable, as they serve to prolong the period of fermentation, which otherwise might be too rapid.

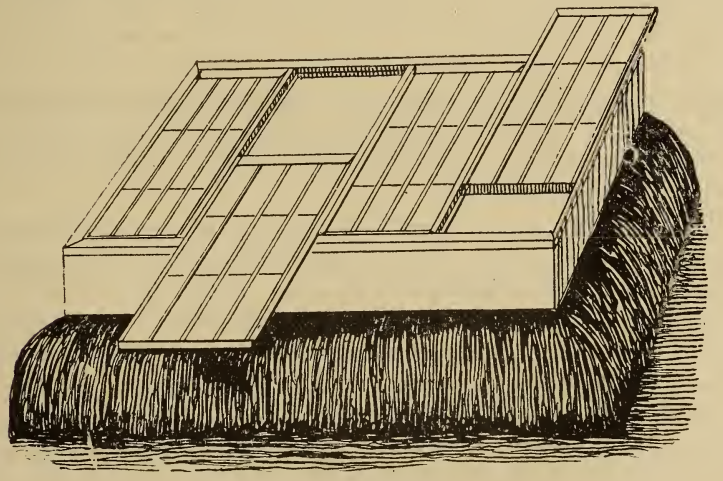


FIG. 434.—HOTBED.

LOCATION AND MAKING.—Selecting a well-drained location, and one never flooded by rain, excavate a pit one or two feet deep, and one foot longer and one foot broader than the box. Into this place six inches of rough barnyard manure, corn stalks, leaves or straw, for drainage, and on it lightly fork in the fermenting dung and tramp it firmly down to a depth of two feet. Place on the box and fit the sash lightly, cover with mats and allow fermentation to again proceed, banking up with hot manure on the outside all around at an angle of 45°. Place on top of the manure a layer of three inches of rich, moist, finely pulverized soil. In a day or so the temperature will rise to 120°. When the temperature has fallen to 90° destroy all the weeds which have sprouted, and sow the seed for which the bed is intended. Cover every night with mats to exclude frost, and give air during the day, never allowing the temperature to fall below 70° or rise above 90°. The secret of growing good plants is to give plenty of air, else the plants will be sickly, spindly specimens. Short, stocky plants are what are desired. Sow the seed in rows three inches apart and one-quarter to one-third inch deep, and cover by sifting on fine earth.

CARE OF HOTBEDS.—Water every evening. Remove the mats every morning about nine o'clock, give air about ten o'clock. Cut off the air in the afternoon as soon as the air becomes the least chilly. Cover with mats before sunset. Hotbeds should be covered early in the evening, to retain their heat, and in the morning uncovered when the sun rests upon the glass, as every effect should be made to give the plants all the sunlight possible, as its rays are vivifying to a degree beyond the amount of its heat, it having a chemical and physiological effect beyond explanation. Even dull light is better that no light, consequently it is a bad plan to cover sashes with mats, except for the direct purpose of keeping out cold. Pepper and egg plants require more heat than other plants. Success depends on bottom heat from the manure, top heat from the sun, water from daily application, and air at midday. Without plenty of air the other requisites will be fruitless. All seedlings should be transplanted into other hotbeds or intermediate beds when two inches high. Hotbeds may be used for forcing lettuce, radish, egg plant, pepper, tomatoes, cabbage, cauli flower and ornamental flowers.

ARTIFICIAL HEAT.—We have known locations where stable manure for hotbeds was not readily obtained, and to meet such conditions we give the following directions for manufacturing a fermenting material for the production of a moderate and continuous heat, the quantities named being sufficient for a box twelve by seven feet. Take as the crude materials, 500 lbs. of straw, three bush. powdered quicklime, six lbs. muriatic acid, six lbs. saltpetre. Having prepared the excavation of proper dimensions, spread three or four inches of forest leaves or old hay in the bottom. Upon that spread eight inches of the straw, tramp it down and sprinkle with one-third part of the quicklime. Dilute the six pounds of muriatic acid with twenty gallons of water, and, by means of an old bloom,

sprinkle the bed with one-third part of the solution. Make another layer of eight inches of straw, applying quicklime and the solution as before. Repeat for a third layer. Upon this make a fourth layer of straw, and upon it sprinkle the four pounds of saltpetre dissolved in thirty gallons of water. Place the box in position, bank up outside, within the box spread three inches rich, finely pulverized earth, and put on the sash. A heat will soon be generated which will continue for two or three weeks.—Landreth's Catalogue.

THE GRAPE HOE.

We show an engraving of a most useful tool in the vineyards, which was recommended by Prof. Hutt, at Peterborough, as being of so much service in the New York State vineyards. After cultivating the rows, this tool will take out all grass and weeds that remain under the wires, and around the vines and posts, and will thoroughly stir the soil close to the vines. Without careful attention in driving, the hoe is guided in and out around the vines by the dirk castor wheel, to which the handle is attached. The horse is hitched to one side of the pole, which gives plenty of room for the plow to work under the vines or bushes without injury to them from the horse or the whiffletrees. The engraving is shown by courtesy of Messrs. John H. Grout & Co., of Grimsby, Ont.

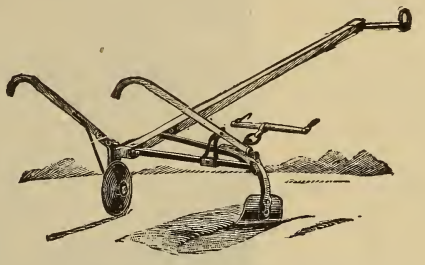


Fig. 435.—The Grimsby Grape Hoe.

Commercial Fertilizers for Strawberries.—Land of medium fertility requires but little, if any, commercial fertilizers. Good results have been obtained from planting cow peas between the rows late in July. Open a deep furrow between the rows, drill in the seed at the rate of one and a half to two bushels per acre, cover with a culitvator or harrow so as to leave the soil in proper shape about the strawberry plants. The shading of the land during August and September, and the vines lying between the rows during the winter months is a decided benefit both to the land and to the strawberries. Properly managed, land in strawberries increases rather than decreases in productiveness. With more or less vegetable matter growing on it during the greater part of the year, and exposed to the sun only a part of the summer, the mechanical condition is being constantly improved, and the vegetable matter plowed in adds fertility.—Miss. Exp. Station.

Fig. 436—A Black Walnut Tree.

BLACK WALNUT TREES FOR LUMBER—I.

NOW that the older plans of farming operations, too long persisted in in this province, are slowly but certainly giving way to more intelligent systems, the present appears to be a seasonable time to again draw the attention of land-owners to the advisability of tree planting, as one of the best means of increasing the productiveness of the soil, and thereby securing greater prosperity to the farming community in the near future, with a certainty of greater pecuniary reward at a more remote future.

During the past twenty years, when so many new ideas, methods and plans have been advanced solely in the interest of the owners and tillers of the soil, no other proposition has been received with so much approbation and with so few objections as that of the necessity and the desirability of tree planting, as a means towards public prosperity; and yet but little or nothing has been accomplished. The principal cause of this inactivity seems to be that the immediate pecuniary advantages to be derived from this source is obtainable

only in an indirect way, while the ultimate reward, which is admitted by thoughtful persons to be both large and certain, can be realized only after many years.

The subject of tree-planting having been so favorably received (in theory) by that portion of our people most directly interested—the land-owners—my purpose now is to advocate only one branch of it, the growing of black walnut trees, and to treat the subject as suggested by the Editor of this journal, as seen in the title of this paper.

Black walnut trees for lumber, implies the growing of these trees on a large scale and for commercial purposes. This may only be done by individual holders of large areas of land or by the collective efforts of the holders of ordinary farms, which is by far the larger area in this province.

The black walnut tree—*Juglans nigra*—is indigenous only to the south-western portion of this province, but can be successfully grown, not only anywhere in Ontario, but throughout the cultivated portion of Canada, and also in most of the northern countries of Europe.

Some of the reasons for advocating the growing of walnut trees—trees which are not indigenous to the larger portion of this province, in preference to many other beautiful varieties that are—may be thus summarized:

1. It is more easily propagated, and requires less care and attention to secure successful growth to maturity than most other long-lived trees.

2. It grows and matures best on land less valuable for agricultural purposes generally than most other varieties.

3. It is one of the most beautiful of trees, grows rapidly during its earlier existence, and contributes in many ways during its growth towards securing better results from the farm.

4. The lumber made from the matured tree commands the highest market prices.

It is proposed to treat these four propositions consecutively, but first it may be well to show why so many trees of this variety fail to grow after being transplanted.

If a walnut tree about one year old be carefully taken up from suitable soil, and, with its roots intact, some peculiarities in its development may be observed which may throw some light on its requirements. The portion above ground will be one straight rod from one to three feet in length, and from one-quarter to one-half inch in diameter at its base, and but little smaller at the top. The root, which is about the same length as the tree, consists of one long, straight tap-root having a few tiny rootlets radiating from it, resembling a carrot somewhat in its appearance, especially when it is noticed that the root is about double the size of the stem at the juncture of the two parts. Trees for transplanting are generally obtained from the nurseries when about four years old. At this age the tap-root, when grown in suitable soil, will be several feet in length. It is, therefore, found impracticable to preserve but a small portion of the root

when taking up such trees. The practice in digging is to cut the tap-root eight or ten inches below the surface, and to preserve as many as possible of the rootlets springing from this portion ; the proportion of the roots saved rarely exceeding one-quarter of the whole. Now, if the rule which is often applied to deciduous trees to "reduce the top in proportion to the loss of roots," could be applied, the result might be different, but the peculiarity of the growth of this tree precludes its application in this case. It is seldom that more than an odd twig here and there can be taken off without destroying the tree. The source of vitality of such trees are thereby so much lowered that several years' growth is required to regain this loss. Indeed, such trees ten or twelve years old rarely attains the height and the healthy appearance of untransplanted trees of one-half that age.

(1) *Propagation and cultivation.* For whatever purpose walnut trees may be required, whether for shelter, for ornament, or for profit, it is a matter of the utmost importance that the nuts be planted where the trees are to grow. The method of planting may be of the most primitive kind. Holes three or four inches deep, of sufficient size to receive the nut, may be made with a pointed stick ; force the nut to the bottom of the hole with the other end of the stick, which should be blunt ; earth is then placed on the nut sufficient to fill the hole and well trod down. This is all that is absolutely necessary, yet much better results will undoubtedly be obtained if the soil is first put into a good mechanical state by thorough trenching to the depth of two feet or more.

The cultivation and attention required during the succeeding ten years depends upon the immediate purpose for which such trees are grown. If planted along division fences for shelter for vineyards, orchards, or growing crops, or for the protection of buildings from prevailing high winds, or for ornaments on the lawn, the trees in such cases being comparatively isolated, nothing remains to be done but to so protect them that nothing whatever may touch them for ten or twelve years, by which time they will be safe from all danger, except from mischievous or thoughtless persons who may break the branches, or otherwise injure the trees, in their efforts to obtain the nuts before they are ripe, and, therefore, of no value. In all these and similar cases, the trees will branch near the ground, and, therefore, better serve the several purposes for which they were planted.

Lindsay. THOS. BEALL.

A SUCCESSFUL ENTERPRISE at Grimsby is the growing of tomatoes under glass. Two large greenhouses, 200 ft. long, have been erected for this work, and for two or three seasons past we have been shipping beautiful large tomatoes to the city markets, at from 30 to 50 cents a pound. Each tomato is carefully wrapped in tissue paper, on which is stamped the grower's name. The Garden and Forest notices these fruits as coming into the New York market.

THE TWENTY-FOURTH ANNUAL MEETING OF THE NORTH AMERICAN BEE-KEEPERS' ASSOCIATION.

Wintering.

DR. G. R. PIERCE gave an able paper upon the above; he advocated greater care and closer observation in bee-keeping. We had passed the period when any one could succeed in bee-keeping. As to wintering it was necessary to understand the conditions required, and consider not one, but all. The following facts should be considered:

1st. Bees winter in good conditions generally, if they have sufficient food and can take cleansing flights every three or four weeks.

2nd. They do well in very severe winters if the period of greatest cold is experienced in November and December and January, but if the coldest weather is in January and February and March, disease is almost sure to be indicated, unless the hives are well protected.

3rd. A severe winter following a season that gave no fall flow of honey is usually fatal to the inhabitants of an unprotected hive.

4th. A normal colony of bees hived in a large box or gum and allowed to keep all honey gathered, say to the amount of 60 or 80 pounds will live and keep healthy no matter how severe or how prolonged the winter may be. Instances are on record where bees have occupied such hives from ten to fifteen years.

5th. A colony of fair strength, as to number, will endure the severe cold of our winters, no matter how prolonged, until a part or all of the cluster have eaten the honey stored directly above; if the cold continues after this there is danger ahead. By considering one or two of these propositions and ignoring others, one may assume any disturbing element to be the cause of winter losses, but to reach the true cause all facts and phenomena with which we are acquainted must be carefully considered. In northern climates all animals subject to man require virtually the same conditions to endure the cold, and these are quietude, a warm abode, and sufficient food of the proper kind to supply the nutritive functions of the body. Bees are no exception to the rule, though they are physically different from the vertebrae. They gather the food suited to their organism, and, when left to themselves, will store it in such a position as to be available at all times. They are enabled to enjoy a reasonable degree of warmth by their mode of living at the ceiling of their dwelling instead of on the floor, thus enjoying an atmosphere made temperate by heat evolved from the clustered colony.

In order to meet the requirements of a healthy bee hive, in outdoor wintering, I would briefly suggest the following: 1st, a sufficient quantity of honey to meet the demands of the colony until the bloom of the following spring. This honey store should be so distributed that the combs upon which the bees are clustered will contain honey enough to feed the colony during the cold weather, reserving the side stores for breeding in the spring. Never put empty comb in the centre of the hive after the honey season has closed. 2nd, the cover of the hive should be a solid board, sealed tight by the bees, and this covered to the depth of ten or twelve inches with some heat-retaining substance, in order that the top of the hive may be kept warm; protection to the other parts of the hive is also absolutely necessary, at least in the North-Western States. I have followed the discussion in "Gleanings" concerning sealed covers, with considerable interest, and am not surprised that success has not attended some of those who have tried them. The reason is quite plain to my mind. Too much emphasis has been placed on one part of the method, that is the sealed cover, ignoring to a great degree the deep covering above, a most essential adjunct. In some regions, as Central Ohio, Indiana, Pennsylvania, etc., the depth of covering indicated may not be necessary, but in colder climates the sealed cover will be a failure without it. Space does not permit of my explaining in full all the details of my method of wintering. In my work "The Winter Problem in Bee-keeping," I have stated these at length. Nor do I consider that all bee-keepers should understand what conditions are necessary and then provide for these in any manner convenient to his or her situation and surroundings. Since publishing "The Winter Problem," I have found by setting, that an empty space below the hive is a valuable adjunct in wintering out of doors, not to let the foul air settle at the bottom, as was, first claimed, but for the following reasons: 1st. It is an absolute safeguard against the entrance of the hive becoming choked when covered with snow. 2nd. The bottom of the hive is, in winter, the coldest; this space lifts the cluster above the cold boards. 3rd. Bees are not apt to fly out on cold sunny days if the lower edge of the comb is three or more inches from the bottom board. The strength of the colony is thus conserved, and early breeding encouraged.

In conclusion let me say, that winter losses are not caused by poor honey, by fruit juice, by pollen, or by bacteria, it is simply a case of *protection* and *food*.

Brantford, Ont. R. F. HOLTERMAN.

Manure for Pear Orchard.—Hitherto I have always used stable manure in my pear orchard. This year I submitted a good dressing of steamed bone and muriate of potash. The effect on the quality of certain varieties was quite marked: Rostiezer, Gifford, Bartlett, Bosc and Lawrence were greatly improved. The Tyson, Sheldon, Anjou and Winter Nelis were but slightly affected in respect to quality. The Anjou, however, whether for this or some other cause, keeps much better than ever before.—Gardening.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

APPLE EXPORTERS.—A meeting of apple exporters has recently been held in the Board of Trade Rooms, Toronto, for the purpose of organizing for a better system of conducting their business. Other countries are year by year becoming stronger in opposition to us, and to hold our own against them concerted action is necessary. One of the most important points is the fixing of a standard by which buyers and exporters may buy and ship, as is done in grain and flour. The government standard, in the opinion of Mr. Shuttleworth, as at present constituted, is too high.

THE NEW FRUIT GROWERS' ASSOCIATION IN QUEBEC.—The programme of the meeting of this Association was good. Some of the subjects discussed were: "Best Market Varieties of Apples," "Grape Culture," "Plum Culture in the North," "Notes on the Varieties of Plums grown on the Island of Montreal," "Will it pay to Continue Growing the Fameuse Apple," "Fruit Packages," "Orchard Culture," etc. We wish this new enterprise great success.

THE PAWPAW, or Custard, apple *(Asimina triloba)* the tree of which is found in the Niagara Peninsula, is spoken of in the Rural Canadian as worthy of experimentation. The fruit is four or five inches long, banana shape, and grows in small clusters. The flesh is golden-yellow, soft and puply when ripe; and in parts where it is abundant it is made into pawpaw butter and pawpaw fritters. It would probably succeed in a large section of Ontario, and in a considerable area of British Columbia. Who knows what the cultivator and the hybridist may do for this fruit?

NEW EARLY AND LATE VARIETIES OF STRAWBERRIES.—The Geneva Experiment Station gives, in Bulletin 64, the result of some experience with strawberries and strawberry crossing. Five early varieties are given, classed according to their yield, prior to June, 21st, 1893. Michel's Early stands first, one plant yielding in all 210 ounces, 176 of these prior to June 21st; Beder Wood yielded a total of 196 ounces, 64 of them prior to June 21st. Of six late varieties, ranked according to the yield after July 1st, Townsend's No. 2, a staminate variety, stands first. Its total yield was 288 ounces of fruit, 192 of them after that date. We note the progress of this work, believing that future experiments in this direction will result in the production of varieties of strawberries with such tendencies toward early and late bearing respectively, that the strawberry season will be much lengthened out, which is certainly a very desirable object.

IMPORTANCE TO CANADA OF HER FRUIT INDUSTRY.—Prof. C. C. James, Deputy-Minister of Agriculture of the Province of Ontario, gave the following statistics at the meeting of the Ontario Fruit Growers' Association at Peterboro': There were 7,000,000 bearing apple trees in Ontario, 2,000,000 grape vines, 700,000 plums, and 500,000 each of cherries, pears and peaches, and the value of the products of these trees was approximately placed at $20,000,000; while the value of last year's wheat crop was $15,000,000, and of the cheese product between $9,000,000 and $10,000,000. This estimate, at moderate prices, shows the importance of the fruit industry of Ontario. In view of these statistics, surely any money that may be spent in improving the prospects of the fruit growers should meet with public approval. Why should not the Dominion spend some money in introducing our fruits into foreign markets; and who will find fault if the Provincial Legislature makes a special grant for conducting experimental work in fruits, as is being proposed by a committee of our Association?

THE LIST OF PLANTS AND TREES distributed by the Fruit Growers' Association of Ontario from 1875 to 1893 inclusive; is published here, to show what has been done in experimental work up to the present time, and we hope soon to collect sufficient data to give a tabulated statement of the results.

1875—Swazie Pomme Grise apple.

1896—Glass seedling grape.

1877—Goodale pear.

1878—Burnet grape.

1879—Ontario apple.

1880—Saunders' new hybrid raspberry.

1881—Senasqua grape; Dempsey potato; Hydrangea paniculata; Wealthy apple.

1882—Spirea prunifolia; Lee's prolific black currant; three bulbs of Gladioli; Moore's Early grape.

1883—Rose peonia; Worden grape; Niagara raspberry.

1884—Canada Baldwin apple; Deutzia crenata; Prentiss grape; seed of pansy, mixed aster, and Drummond's phlox.

1885—Russian apple; Catalpa; Fay's prolific currant; double tulip; seeds of Diadem pink, striped petunia, salpiglossis.

1886—Ontario strawberry; Yellow Transparent; Lucretia dewberry; Early Victor grape; Marlboro' raspberry; seeds of Gypsophila paniculata, Aquilegia caerulea, and Delphinium, mixed colors.

1887—Vladimir cherry; dahlia; Hilborn raspberry; Niagara grape vine; single-flowered geranium.

1888—Storm King fuchsia; Golden Queen raspberry; Niagara grape vine; spring-flowering bulbs, viz., Tuberose (double Excelsior Pearl), dahlia (Gaiety, striped flower), Napoleon gladiolus; Jessie strawberry; Doyenne Boussock pear; Abutilon (double); Ostheim cherry.

1889—Niagara grape; Vergennes grape; Princess Louise apple; Paul Neyron rose; Baron de Bonstettin rose; Jessie strawberry.

1890—Russian apricot; Simon's plum; John Hopper rose; Shaffer raspberry; Wealthy apple; Bubach, No. 5 strawberry; Richardia alba-maculata.

1891—Golden White apple; Mill's grape vine; Williams' strawberry; Triomphe de Vienne pear; two cannas; Gen. Jacqueminot rose; two dahlias.

1892—Moore's Diamond grape; Idaho pear; Gypsy Girl, Round Borsdorfer, Blushed Calville, Silken Leaf, and Little Hat apples; Ampelopsis Veitchii; Louise Canning, and Mrs. Richard Elliot chrysanthemum; double English violets, Napoleon (blue) and Princess Louise (white).

1893—Rosa rubifolia; Spiræa media rotundifolia: Picea pungens; Pinus ponderosa; Pseudotsuga Douglasii; Seedling Black currant; Red Queen, Golden Reinette and Crimean apples.

For 1894—The Central Experimental Farm will send us Caragana arborescens, Acer gumala, Prunus punicea (sand cherry); Seedling raspberries, etc., to which will be added some of the newer varieties of strawberries.

Preparing for a Lawn.—In order to have a good lawn quickly in a dry soil, the ground must be enriched and well plowed. To avoid weed seeds, this enriching had best be done with ground bone, sown on the furrow, at the rate of eight or ten pounds to the square rod. Along with this, either good wood ashes in about double the quantity, or muriate of potash in the same quantity, is necessary. It is worth taking considerable time and trouble, when preparing to seed, to get the ground level, or evenly graded, as depressions are not only unsightly, but as they collect water they are usually weedy spots. After plowing, harrow well, sow the seed, and "board down" the surface in the ordinary way in which gardens are smoothed for fine seeds. Then keep off the surface until the grass is large enough to be safely walked upon.—Vick's Magazine.

Question Drawer.

Sawdust as a Fertilizer.

611. Sir,—About four miles from me is a large heap of sawdust from four to fifteen years old, made chiefly from soft elm, basswood and hemlock logs. My garden of eight acres is strong clay, but not stubborn. Would it pay me to draw it that distance, and if so, what fruits would it help most? Has it any fertilizing properties?

R. Phippen, *Parkhill.*

Sawdust is of little value as a fertilizer. It contains a little more nitrogen than straw, and less potash and phosphoric acid. This is well shown in the following comparative table from the Bussey Bulletin, which shows the per cent. of these elements in sawdust, straw, twigs, etc., in a manner most interesting to the horticulturist:

	Sawdust.	Straw.	Twigs with leaves.	Best autumn leaves
Per cent. of				
Potash,	0.10	0.50 to 1.00	0.88	0.10 to 0.50
Phosph. acid,	0.05	0.20 to 0.30	0.33	0.06 to 0.30
Nitrogen.	1.00	0.33	1.28 to 2.84	0.75

This analysis shows that sawdust has only one per cent. of nitrogen, only one-tenth of one per cent. of potash, and only one-fifth of one per cent. of phosphoric acid.

This old rotten sawdust, however, would have absorbed some additional fertility, and its mechanical action on the stiff land of our correspondent would no doubt make it well worthy of his attention. If worked in, it would render it looser in texture and more easily worked. Possibly the best use would be as a mulch on the surface among his strawberry plants, and around his plum and pear trees. It is excellent for this purpose, keeping the berries clean and the soil moist.

Marsh Mud.

612. Sir,—Are there any benefits to be derived from applying marsh mud to fruit trees, beyond the salt it contains, and if so, what?

E. McWatt, *Truro, N. S.*

The action of the salt is perhaps the least benefit to be derived from the marsh mud. It is rich in humus, which is valuable in several ways: first, in supplying nitrogen, which has accumulated in it from the various plants which have lived and died in it. The texture of heavy soils is made lighter and more porous by it; it retains moisture, and absorbs ammonia. Thus it is evidently of considerable value to certain soils. It is not suitable to wet, boggy soils.

Prof. Shutt has analyzed samples of marsh mud from various parts of the Maritime Provinces, and finds they consist largely of ground-up rock matter, clay and sand, shells and organic debris. They are inferior to swamp muck in

organic matter and nitrogen; most of them contain the elements of fertility, viz.: nitrogen, phosphoric acid and potash, but are inferior to swamp muck in organic matter and nitrogen. They need to be supplemented with stronger manures.

He says in his last report:—These muds have been largely used in the Maritime Provinces as a fertilizer, and good results as a rule have followed the first applications. It has been the experience of many, however, that the beneficial effects are not lasting, and that after a few years there is but little response from a repeated dressing when applied as the sole manure. This is not to be wondered at, since these muds are not complete fertilizers and cannot furnish all the plant food in the proportions required by farm crops. To a certain extent they supply the elements of fertility and also act on many soils as stimulants, but they must not be considered as concentrated manures, nor should they be used exclusively. As far as possible, they should be supplemented with more assimilable and stronger manures. Barnyard manure, superphosphate and wood ashes are probably the easiest to obtain and the cheapest for use with these muds.

Coal Ashes as a Fertilizer.

613. SIR,—Do coal ashes possess any fertilizing properties at all, or are they worthless for fruit trees? E. E. MCNUTT, *Truro, N. S.*

Coal ashes possess some value as a fertilizer, but it is very little. Their chief benefit is mechanical. When applied to the surface of the ground, they are an excellent mulch, and when worked in they render the heavy soils looser in texture, and, consequently, more porous to the beneficial action of the air. On light soils they have no value whatever except as a mulch.

Paris Green and Stock.

614. SIR,—Would it be injurious pasturing in an orchard where Bordeaux mixture and Paris green combined were used for spraying?

A. E. SHERRINGTON, *Walkerton.*

Formerly, in the application of these poisons, we had grave fears that the grass underneath the trees would be rendered poisonous to stock feeding upon it, and we carefully shut out all animals from the orchard until some heavy rains had washed the grass clean. Latterly, however, we have come to the conclusion that the amount of poison which reaches the grass is so infinitesimal in quantity that it could have no injurious effects upon the stock which is feeding upon it. Our horses have had free range of our orchards during the spraying season for the last two years, and no injurious effects have been apparent. We would be glad to hear from our correspondents whether any one has has a contrary experience.

Ammonia in Spraying Mixtures.

615. SIR,—I would like to ask some of our chemisis what good is derived from the ammonia which is used in mixing ammoniacal carconate of copper! Has it any fungicidal power? JOHN HARKNESS, *Irena, Ont.*

Ammonia has no fungicidal power, and is quickly evaporated after being applied to the trees. The only object in using it is to dissolve the carbonate of copper in order that it may be easily mixed with the water. The use of ammoniacal carbonate of copper is, however, being superseded by the Bordeaux mixture in which the sulphate of copper is used, and ammonia is not necessary to make the solution.

An Evaporator.

616. SIR,—Would you kindly give me the name of some person to whom I could apply for the setting up of an evaporator which would be capable of evaporating 150 bushels of apples per day? A. FUNNELL, *Trenton.*

We would refer our correspondent to Mr. R. J. Graham, of Belleville, who has had wide experience in handling evaporators. We know of no factory in Ontario where evaporators, such as our correspondent requires, are made. There are several American firms: The Trescott Manufacturing Co., Fairport, N. Y.; Tripp Bros., Sodus, N. Y.; and The American Manufacturing Co., Waynesboro', Pa.

Potash for Fruit Trees.

617. SIR,—Would it be advisable to apply potash to fruit trees, especially plums, before they come into bearing, or would the trees not be able to use it to advantage if applied before fruiting? E. E. MCNUTT, *Truro, N. S.*

Potash is useful to fruit trees at any stage of growth. It is one of the principle elements entering into the growth of the tree, and its effect upon the foliage and upon the general vigor of the orchard may be readily discerned. We have found it useful in applying it to pear trees in increasing their productiveness, as well as in increasing the size and excellence of the fruit. It is of more benefit on light soils than on heavy soils.

Salt as Manure.

618. SIR,—Is salt of any value as a fertilizer for fruit trees, and, if so, what quantity per tree? A. SHERRINGTON, *Walkerton.*

Salt is sometimes useful, but is not itself a fertilizer. The beneficial effects sometimes apparent from its application to certain crops are due to the

mechanical action resultant from its presence in the soil. Salt aids in the decomposition of certain substances which are already present, thus rendering them the more readily assimilated. Great caution is necessary in the use of salt, because it is a check to vegetable growth, and, if used too freely, will destroy vegetation altogether. Prof. Storer says that instances are on record where more than three hundred pounds to the acre diminished the beet crop, and more than four hundred pounds diminished the yield of potatoes. Melons are said to be very easily destroyed by the use of salt. Mature plants, as cabbages, cauliflowers, celery and onions will endure an application of two or three hundred pounds per acre, and receive apparent benefit. Asparagus is particularly fitted to endure the application of salt, but whether its beneficial action is in any case worthy of the trouble and expense of application, appears to be still a debatable question.

Secondary Form of Downy Mildew.

619. SIR,—My grape vines cast their leaves last fall before the fruit was ripe ; and later the grapes dropped so badly they were almost worthless. Some of them turned brown. The varieties most affected were Niagara and Rogers No. 4. Could you explain?

L. W. *Grimsby.*

Reply by Prof. John Craig, Ottawa.

This was probably the secondary form of downy mildew, which sometimes is not apparent on the fruit at first, but manifests itself late in the season by causing the foliage to drop as well as a large portion of the berries to turn brown and fall off. I have noticed this form of the disease on the Niagaras and on some of the Rogers varieties about Grimsby. Try late spraying with copper carbonate next year.

Wants a Fruit Farm.

620. SIR,—I am a single man, twenty one years of age. Could you tell me how best to spend my evenings to fit myself for fruit farming? I have been employed in gardening for three years past. I would like to locate about Digby, N. S. Can you tell me of any farms for sale in that locality. Are any parts of N S. more suitable for cherry, plum and apple culture? Will such an investment pay? Is the supply of such fruit equal to the demand?

W. O. R., *Montreal.*

Your best plan would be to read up on fruit culture. The back volumes of our Journal would give you many important practical points. Thomas' American Fruit Culturist will give you much valuable information on fruit culture. Storer's Agriculture will post you on treatment of soils. Select out special books from our published lists and post yourself. Apple growing is less remunerative than formerly, but is still fairly profitable if you choose your

varieties well. Cherries and plums also are profitable, if well cared for. Mr. J. W. Biglow, Wolfville, N. S., to whom your letter was referred, writes:

"I can only say to the Montreal man to make no purchases here till he sees the country for himself, and pay no attention to land sharks. Digby is not considered the best fruit country. If he has means and staying power he cannot do better than invest in a fruit orchard in the Annapolis Valley. Ask him to write to our secretary, P. C. Parker, Berwick."

Distance For Dwarf Apples.

621. SIR,—How far apart should dwarf apple trees, grafted on crabs, be planted?
S. J. RUTHERFORD, *Gaspereau, N.S.*

It is difficult to give a general reply to this question without knowing the varieties, for they differ so much in habit. In Britain it is customary to plant dwarf standards on Doucin stock, ten feet apart; and dwarf bushes on Paradise stock, five or six feet apart. Much also depends upon pruning, by which they may be kept in almost any limit desired, if one has the time to attend to them. We have some dwarf Red Astrachans allowed to have their own way, except for ordinary thinning, and they need to be at least fifteen feet apart, with such treatment.

The Howell Pear.

622. SIR,—Is the Howell preferable as a dwarf or as a standard? Would you plant it in preference to the Duchess? At what distance would you plant dwarf pears so as to cultivate them easily, and also to drive a wagon between the rows?
W. V. HOPKINS, *Burlington.*

The Howell pear may be grown successfully, either as a dwarf or as a standard. The pear is a desirable one, and much more even in shape and the skin is cleaner than the Duchess. It takes on a fine yellow color when ripe, and, considering the number of Duchess which has been planted, it is possible that an orchard of dwarf Howell would be the more satisfactory of the two. Ten by ten is rather close. Some planters place dwarfs as near as ten feet each way, but, in order to drive down the rows, it would be better to place them ten feet apart in the rows, and the rows fifteen feet apart.

Bulbs after Flowering.

623. SIR,—What should be done with bulbs after flowering? Are the little bulblets that grow on the side of the old ones of any use?
E. E. L., *Hamilton.*

Will some florist answer?

Black Barbarossa Grape.

624. SIR,—Please tell me where I can obtain the Black Barbarossa grape, as I don't see it offered for sale by any grower. I would like to have your opinion as to its hardiness and adaptability to the Canadian climate ; also how it acts under glass ? I have just built a vinery and would give it a place among others if its worth while.

Reply by Prof. L. H. Bailey, Cornell University.

Black Barbarossa is one of the Vinifera class, and is only adapted to cultivation under glass in the north. I do not know who handles it, but should write Ellwanger & Barry for it.

⁂ Open Letters. ⁂

Plums and other Fruits in Wellington.

SIR,—As I have not written to the HORTICULTURIST for a long time, I will now ask your indulgence for a few remarks anent the destruction of plums in this neighborhood (North Wellington) last winter. As there seems to be no report about it, so far as I can learn, I would say the damage done was extensive, about 75 per cent. being killed to the ground. The Lombards suffered most, and, were it not that the young unbearing trees shared the same fate as the bearing ones, I would blame its heavy-bearing propensity as thecause of its being more attacked than others. However, it must be remembered that it is more extensively grown here than any other variety. The following varieties were killed with me: Lombard, Yellow Gage, Jefferson, Niagara, Saratoga, Shipper's Pride, Glass' Seedling, General Hand, Washington and German Prune.

The following were uninjured : Pond's Seedling, Duane Purple, Smith's Orleans, and Damson. I might remark that I consider the Smith's Orleans the best all-round plum that I know of ; it is hardy, a good bearer, of good quality to eat out of hand or to preserve, and large in size. I ought to say that some people attribute the death among our plums as being caused by the trees shedding their leaves the summer before, and had to go to the wall by weakened vitality. This view seems to have truth on ite side, as the trees have lived through more severe winters than last one.

It is now about twelve years since a disease killed off a large number of our best plums. It happened in summer, when the trees were loaded with fruit. The leaves dropped off, and the plums rotted on the trees ; likewise, a very disagreeable smell was emitted from the diseased sap. I for one looked in vain for a solution of the mystery from you wise men of the HORTICULTURIST, but they either had not heard of it, or did not take enough interest in the matter. It may be of use to those who may purchase plum trees, to know what sorts are most subject to black knot. The following kinds I have had for years without any sign of it, viz. : Pond's Seedling, Duane's Purple, Smith's Orleans, Yellow Gage, and Jefferson. The Lombard, Damson and Saratoga are so much subject to it, that they should never be planted.

I must not omit to state that the much lauded Pearl gooseberry turned out to be nothing more nor less than the Downing, with me and others. Mr. Smith may have made a mistake in digging up the Downing in place of the Pearl.

F. W. PORTER, *Mount Forest.*

NOTE.—Mr. Smith tells us that when the Pearl is allowed to overload, the berries are not larger than Downing, which they much resemble, but that it excels all its competitors in productiveness.

Fruit in Middlesex.

SIR,—1893 is now numbered with the past, but unlike most other years, it will be specially remembered by the Columbian Exposition, in which Canada, and especially Ontario, has made a very creditable display; and by the number of prizes taken by them, which show the very excellent quality of their exhibits.

There have not been as many apples shipped from this part as usual, for they have only been a very light crop. Few people will have enough to keep for their own use. Spraying fruit trees will be the order of things in future, in order to secure good fruit and free from worms, as they have been having things mostly their own way in the past. Pears were about an average crop, while plums were a better crop than for some time. But there were not many peaches, and cherries were not as plentiful as in some previous years. Small fruits of all kinds were a good crop, except blackberries, which, on account of the extreme dry weather, were a partial failure. I find the Erie too tender, unless it is laid down in the fall; Ancient Briton is the best that I have.

The plants that you sent to me did very well, and the strawberries will show what kind of fruit they yield this year. There are very few which take any interest in small fruits, except some odd bushes of currants and gooseberries, which are generally allowed to struggle along with grass and weeds, and are often stripped bare of leaves before the fruit is ripe.

J. M. WATERS, *Fernhill, Ont.*

Fruit in Simcoe.

SIR,—Of the grapes received from the Association, the Salem has done remarkably well. I had a good many of this variety until 1892, when they mildewed badly and the whole crop was lost. Last year, by applying four sprayings of the Bordeaux mixture, the mildew has been checked and they have produced a very fair crop of fine grapes. I consider the Brighton a good grape for this section. The berry is not so large as the Salem, but it produces good compact bunches weighing one and a-half pounds. It sells well in our market. The Prentiss is a small white grape, with small bunches, but has a sweet and pleasant flavor and is a moderate bearer. The Moore's Early does not pay. The bunches are small, and few and far between. The Burnet is a fair cropper, but too late and too acid. The Agawam, like the Burnet, is too late for us. The Early Victor has a medium-sized bunch, small berries, sweet, pleasant flavor; but this year it has failed with us, on account of the black rot, notwithstanding that it was sprayed with the Bordeaux mixture twice.

I feel satisfied with the Bordeaux mixture for the mildew of the grape, and hope it will effect a cure for the scab on the pear. It did not do all I expected of it last year, but I shall apply it earlier next spring. I intend applying it before the trees bud out, and once before the blossoms appear, and will again apply it, with Paris green added, two or three times after the bloom has fallen.

I find that kerosene emulsion put on too strong will kill the leaves and young twigs, but it is certainly good for the destruction of the plant lice.

In my opinion, grape growing for market in this part of the country, and indeed in all the northern country, is a failure; for before we get our grapes ripened, you growers in the southern sections fill our markets so that they are glutted, and the prices too low to pay us for raising them.

CHARLES HICKLING, SR., *Barrie.*

Salt for Cabbage Worm.

SIR,—I have for the last six years grown cabbages in my garden. When worms appeared on the leaves, I sprinkled fine dry salt early in the morning when the dew was on, and I think it improves the cabbages. Three years ago I had cabbages weighing 30 pounds each.

J. F. LAVOIE, *Cote-des-Neiges, P.Q.*

Fruit in Waterloo.

SIR,—The demand for our strawberries during the last three years has been greater than the supply, and therefore we intend increasing our plantation. Five years ago we first paid attention to small fruits and began with a dozen strawberry plants, the Sharpless, Crescent and Seneca Queen. Now I would like to know the names of three late varieties which would do well on light soil.

We planted four hundred Golden Queen raspberry plants in November, 1892; we fertilized the ground well, made the rows five feet apart, and set the plants two and a-half feet apart in the rows. The new canes of the Golden Queen had quite a show of blossoms in September and October. I pinched them back when they were four feet high.

I spur-pruned our currant bushes for the first time last fall Our Brighton grapes have done well, and every one who has tasted them is delighted with them, preferring them to any other.

MISS ELLEN FEAR, *Elmira, Ont.*

Simon's Plum.

I purchased the peach plum (Prunus Simoni) after seeing its merits and colored plate in HORTICULTURIST. Since that time I have seen its faults also in print. That it has both there can be no doubt. I planted it in 1892, a straight whip stock, it branched out and last year was well set for fruit. Out of curiosity I left twelve plums on to ripen, if they would; eleven did ripen, and a magnificent looking fruit they are on the tree, but they fall off when just about ripe. The aroma is delightful. As for quality, I shared one of them among six, and all had enough! Afterwards I cut one up among nine men and each of them ate as much as they wanted! I preserved six, and opened and ate them; and here is where the merits come in, for each one that tasted it pronounced it excellent marmalade. The juice sets firm and resembles peach, plum and bitter almonds; the tree seems very hardy, is handsome looking, fruit worthless for eating raw, do not know how it would be as preserves or in pies, but for table sauce—well, I am longing for some more of it. I have good prospects ahead, for the tree is full of fruit buds now. W. T. D.

Fruit Growing in Quebec.

SIR,—I take pleasure in reading the CANADIAN HORTICULTURIST and have gained very valuable information from it for the growing of fruit trees in the Province of Quebec. My son has already more than one thousand fruit trees and about three thousand plants of gooseberries, raspberries and blackberries, which are doing remarkably well If it is of interest to you, he may send a small report to you next fall. In L'Islet plums grow wild, and cherries also of the sour kinds, but the latter are much attacked by the black knot.

HON. JUDGE CARON, *Quebec, Que.*

NOTE BY EDITOR.—It is our endeavor to make the CANADIAN HORTICULTURIST of interest not only in the Province of Ontario, but also to all fruit-growing districts of Canada. Any report, therefore, of practical work in the Province of Quebec, or any other part of Canada, will be gladly received for this journal.

Seeds of Ginseng.

SIR,—I notice in the February CANADIAN HORTICULTURIST, Mr. Origen Martin, Webster's Corners, B. C., asks for the address of some one who would supply him with seeds of Ginseng. The plant grows here and in many other parts of Canada where there are hardwood forests; but the roots have been so much collected for druggists, that it is difficult now to find specimens. I obtained some good seeds, together with printed instructions on sowing and cultivating the plant, from Mr. George Stanton, Summit Station, N. Y., who makes a business of cultivating it.

J. FLETCHER, *Ottawa.*

Organization of a Pomological Society for the Province of Quebec.

SIR,—During the past year a movement has been taking place among prominent fruit growers of the Province, which has had for its object the formation of a Horticultural Society which should be truly provincial in character. The efforts of these workers have been successful, so far as obtaining a grant from the local Legislature; and a meeting was called at Abbotsford, on February 8th, for the purpose of electing officers for the current year and the discussion of subjects pertaining to fruit culture.

The committee who have the arrangement of the programme in hand are J. M. Fisk, Abbotsford; R. W. Shepherd, Jr., Como; R. Hamilton, Grenville, and W. W. Dunlop, Montreal.

It is the intention of the promoters of the Society to organize after the same general plan as that adopted by the Fruit Growers' Association of Ontario, dividing the Province into a certain number of fruit districts, and having a representative from each on the receive the co-operation and support of all interested in Quebec horticultural advancement. Board of Directors.

J. C.

Destroying Black Knot.

SIR,—Seeing an article in the HORTICULTURIST last spring on destroying black knot with coal oil, I determined to try its effects on two cherry trees, Early Richmond variety, four years planted, that had each year previously shown lots of bloom, but ripend few or no cherries. Having had to cut away a great many branches, owing to their being infected with black knot, I was about sick of them and was getting careless about the trees, but was anxious to see the result of experiment. I took fresh kerosene and sprayed it well into the parts infected. Later on, I saw the knot was certainly not increasing, so gave them another dose. In due time the cherries ripened and the black knot looked sick. I gave them another dose in November; at New Years, the scar is on the trees, but no signs of black knot around. Those trees have made a very vigorous growth and are about as full of fruit-buds as they can hold.

W. T. D.

Memoranda, 1893.

Russian Apricot.—Color orange, crimson on sunny side. Flesh deep orange, parting cleanly from stone; juicy on one side and crisp on the other when ripe enough to fall from the tree. Ripened from 13th to 20th August about ten dozen fruits, many having previously fallen off from curculio stings. Would make an excellent preserve. (Name lost).

Abundance Plum.—Color bright crimson, yellowish on small portion of under side. Very juicy and sweet, but skin and close round the stone acid. Size rather larger than Orleans. The earliest plum I have grown, falling from the tree from ripeness on 20th August, when Washingtons growing close by were not ripe till 6th September.

Prunus Simoni.—Much as described in nurserymen's catalogues. Fell from tree from ripeness 26th August. Flesh crisp.

A. G. H., *Boyne, Halton County.*

Horticulture in South Africa.

SIR,—In reading an interesting account of the fruit exhibits at the World Fair, Chicago, and observing your name, I write you for some information. I have been for ten years studying fruit-growing and sun-drying of fruit. This is an isolated part of the world, but has a splendid climate, and, were it not for the destructive hail-storms, we would always have fruit in abundance. Quinces grow to perfection; peaches like weeds, thousands lie rotting on the ground every year in almost every garden. I would be thank-

ful if you would give me information how to preserve fruit by the new method of processed water. Also any printed matter on fruit culture with which you can supply me, will be received with pleasure. I would also like information on the best way of sun-drying of fruits, and also of sulphuring fruits which have been sun-dried, as I prefer this latter to evaporated fruit. I would like to know how best to cultivate and prune fruit trees and vines. All information, whether by letter or in books, will be gladly received. Do you know a good method of preserving onions; what varieties are best? I cannot get seed to do well here. I am giving close attention to onion culture, but cannot succeed with them.

T. RHODES, *Kokstad, Griqualand East, South Africa.*

SIR,—I see by a late number of the HORTICULTURIST that spent hops are of little value. In "Henderson's Gardening for Profit," he says he considers them of double the value, load for load, of stable manure. G.

Our Book Table.

BOOKS.

"THE STRIKE AT STARENS" is a prize story from Indiana, published by the American Humane Society. It is a sequel to "Black Beauty," and is intended to point out some of the mistaken ideas held by men about the relationship between them and the lower animals. The author of the book thinks that man should rule over the lower animals in the same spirit that God rules over us, and the book shows what would follow if the support and assistance given us by the lower animals and birds should be withdrawn, and they should go on a strike.

AUTOBIOGRAPHICAL SKETCHES AND PERSONAL RECOLLECTIONS, by George T. Angell, President of the American Humane Education Society, 19 Milk St., Boston. All publications of this Society are made at a very low rate, and full information concerning them may be had from Dr. Angell.

ANNUAL REPORT OF THE NEBRASKA STATE HORTICULTURAL SOCIETY for the year 1893, containing the proceedings of the Summer Meeting held at Nebraska city, June, 1892, and of the Annual Meeting held at Lincoln, January, 1893. Frederick W. Taylor, Secretary.

TRANSACTIONS OF THE ILLINOIS STATE HORTICULTURAL SOCIETY for the year 1893, being the proceedings of the Thirty-eighth Annual Meeting held at Springfield, December, 1893. Henry M. Dunlap, Secretary, Savoy, Ill.

REPORTS.

REPORT OF CHEMIST, Frank P. Shutt, M.A., 1893. Central Experimental Farm, Ottawa.

"MINNESOTA HORTICULTURIST." The Annual Report in form of a Monthly Magazine. Edited by A. W. Latham, Secretary, Minneapolis, Minn.

CATALOGUES.

BRUCE'S CATALOGUE of Seeds for 1894. John A. Bruce & Co., Seed Merchants, Hamilton, Ont. Established 1850. CATALOGUE OF AMERICAN Seeds for 1894. D. Landreth & Sons, 21 and 23 S. Sixth St., Philadelphia, Pa. STRAWBERRY CATALOGUE, Wholesale Price List, 1894; Cleveland Nursery, Rio Vista, Virginia. CRAWFORD'S CATALOGUE of Strawberries; M. Crawford, Cuyahoga Falls, Ohio. FREEMAN'S FERTILIZERS for 1894; W. A. Freeman, Hamilton, Ont. VILMORIN, ANDRIEUX & CIE., Marchands, Grainers, 4 Quai de la Megesserie, Paris. Catalogue General de Graines, Fraisiers, Ognons a Fleurs, etc. A. G. HULL & Sons Catalogue of Trees, Plants and Vines. Nurseries, St. Catharines, Ont. E. W. REID, Bridgeport, O.; introducers of the famous Timbrell Strawberry.
LOVETT'S GUIDE TO FRUIT CULTURE, Spring 1894. J. T. Lovett, Little Silver, N. J. Contains numerous novelties, several colored plates, full of illustrations; free on application. BURPEE'S FARM ANNUAL, 1894. W. Altee Burpee & Co., Philadelphia, Pa. Colored plates, numerous illustrations. WEBSTER BROS.' Book of Canadian Plants for Canadian People, 1894. Hamilton, Ont.

Novelties.

Under this head we simply record the names of some of the recent introductions, together with points of merit claimed for them by the introducers, without any endorsement whatever of their claims.

Fig. 437—Henry Ward Beecher.

The Mary and the Henry Ward Beecher strawberries are being introduced by J. T. Lovett Co., of Little Silver, N.J. The former is pistillate, prolific; berries very large, conical, blunt apex, deep crimson, high quality. The latter a perfect blossom, enormously productive, a cross between Sharpless and Champion; berry not as large as Mary, but high quality, indeed an ideal berry in this latter point.

Fig. 438—Mary Strawberry.

THE

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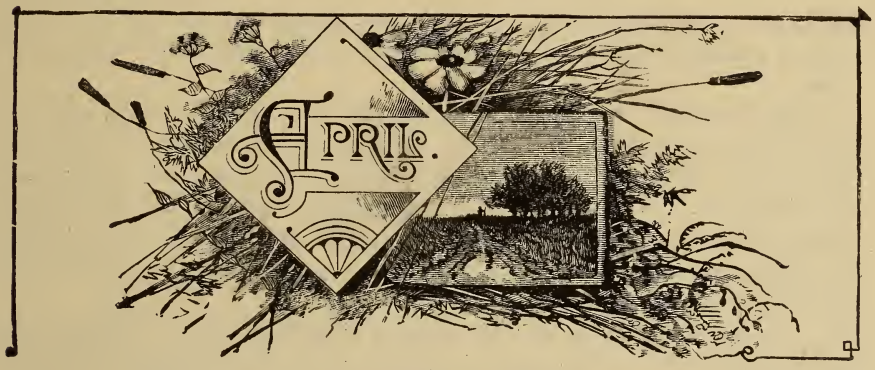


OUR GOVERNOR-GENERAL.

THE EARL OF ABERDEEN, Governor-General of Canada, whose portrait is given in this number, was born August 3rd, 1847, and educated at St. Andrews and Oxford (M.A., 1872). In 1880 he was appointed Lord-Lieutenant of Aberdeenshire. From 1881 to 1885 he was High Commissioner to the General Assembly of the Church of Scotland. From February to August, 1886, he was Lord-Lieutenant of Ireland. In 1893 he was appointed Governor-General of Canada. His Excellency has the honorary degree of LL.D. of the Universities of Aberdeen and St. Andrews.

In Lord Aberdeen's early childhood, although the family lived near London, they had in reality all the advantages of a country life, because the Earl of that day (the grandfather of the Governor-General), who was for some time Premier of Great Britain, held the office of Ranger of Greenwich Park, and gave to his son, Lord Haddo (the Governor-General's father), the use of the Ranger's Lodge, a fine building on the edge of Blackheath Common, with a large and beautiful garden attached to it,—forming in fact a section of the historic Greenwich Park of which one reads in the "Fortunes of Nigel" and elsewhere. In those youthful days no pastime was so much enjoyed by the future Governor-General as working with the gardeners in their various operations in the shrubberies and pleasure grounds; and he had still further extended opportunities of a similar kind during the annual visits to Haddo House, Lord Aberdeen's home in Scotland.

The grounds of Haddo House have long been celebrated for their extent and variety, and for the care bestowed upon their upkeep. The "Premier Earl," during the long period that the estate was in his hands, planted some thousands of acres of trees of the ordinary kinds suited to the soil and climate, and he also formed a pinetum of rare and beautiful specimens, many of which have now grown to a considerable size. The present Earl has followed in the foosteps of his grandfather and his father, and has planted extensively, besides keeping up and developing the grounds, and adding considerably to the hot-houses.

His Excellency has also, for several years, rented a small estate, known as Dollis Hill, a few miles from London. This delightful place has become notable from the frequent visits which Mr. Gladstone has paid there to Lord and Lady Aberdeen. In this sequestered spot the great statesman has always found a quiet and pleasant retreat. At Dollis Hill, His Excellency has farmed about a hundred acres of land. The flower and fruit gardens, though small, are very productive and very pretty.

In 1890, in the course of a trip through Canada with Lady Aberdeen, the Earl purchased a farm of about five hundred acres in the Okanagan District, in the valley known as "Mission." There Lord and Lady Aberdeen have built a neat residence, and have named the estate "Guisachan," after Lady Aberdeen's Highland home,—"Guisachan" being the Gaelic for "the place of the firs." This estate has been laid out mostly in fruit, and promises well. Various kinds

FIG. 693.—LORD ABERDEEN'S HOUSE IN BRITISH COLUMBIA.

of fruit have been tried experimentally from time to time, including some of the more tropical varieties, such as peaches. But Lord Aberdeen, we understand, does not consider that the nature of the soil and the climate make this a reliable crop, and intends that the land shall be devoted mainly to the cultivation of apples, pears, plums, etc. So far as can yet be judged, small fruits are likely to do extremely well.

The same remarks apply to the larger estate at Coldstream (near the town of Vernon, B. C.), purchased in 1891. This property is about twelve thousand acres in extent.

In order to develop the culture of fruit in the district, and also of course to benefit his own estate, Lord Aberdeen has erected a jam factory, and has also imported some first-class machinery; but until a larger area of ground is yielding fruit, it is not likely that the factory can be put into practical operation, inasmuch as it would not be worth while to run the machinery for only a day or two in each week. But the fact that the building is erected and the machinery there, ought to be an inducement and an encouragement to the cultivation of fruit. It was in truth put up in fulfilment of a promise made by Lord Aberdeen, and he considered that it was due to the district that the factory should be erected, so that there should be no uncertainty as to the opportunity for disposal of the fruit produced in the neighborhood. Of course the larger fruit trees are not yet bearing, but the manager's report on the area now under cultivation shows that the smaller fruits do well, and that hitherto the local market has absorbed all that has been produced.

The Specific Action of Nitrogen upon Plants. — The influence of nitrogen in its various forms upon plant growth is shown by at least three striking effects.

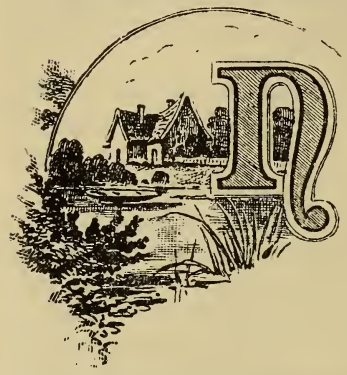
First. The growth of stems and leaves is greatly promoted, while that of buds and flowers is retarded. Ordinarily, most plants, at a certain period of growth, cease to produce new branches and foliage, or to increase those already formed, and commence to produce flowers and fruits, whereby the species may be perpetuated. If a plant is provided with as much available nitrogen as it can use just at the time it begins to flower, the formation of flowers may be checked while the activity of growth is transferred back to and renewed in stems and leaves, which take on a new vigor and multiply with remarkable luxuriance. Should flowers be produced under these circumstances, they are sterile and produce no seed.

The *second* effect of nitrogen upon plants is to deepen the color of the foliage, which is a sign of increased vegetative activity and health.

The *third* effect of nitrogen is to increase in a very marked degree the elative proportion of nitrogen in the plant.

THE WESTERN NEW YORK FRUIT GROWERS—II.

Mr. Willard—The Kieffer Pear—Hardy Peaches—Grape Growing.



NEXT to the worthy President, Mr. W. C. Barry, one of the most prominent members of this Society is Mr. S. D. Willard, of Geneva, N.Y., the Vice-President. Always wide-awake, energetic, humorous, he has a habit of popping up just at the nick of time to emphasize an important point, or to bring the house down with laughter and applause. We have been favored with his presence on several occasions at meetings of our Association, and our reports show how valuable is the information which he has contributed at these times.

Although a specialist in plum culture, of which fruit he has some fifty varieties in bearing, he also grows cherries, quinces, pears, peaches, etc., quite extensively. His interest in plum culture was largely the result of a visit, some twenty-five years ago, to the Hudson river plum grounds, where he saw this fruit grown with such great success, that he determined to make it a prominent feature of his orchard work at Geneva, N.Y. This wisdom of his venture has since been well attested.

He was also one of the first to plant the Kieffer pear as an orchard tree in New York State, and good-naturedly bears the brunt of many criticisms, while he champions it as a profitable orchard variety. Though about sixty years of age, there is not a more enthusiastic fruit grower of any age in the State of New York, just the kind of a man to inspire the members of a horticultural society with confidence in their profession.

The Kieffer Pear came up for discussion again at this meeting, and Mr. Willard said he observed that it was being planted in every direction, and the only fear was over-production. He had been shipping them in car lots all the way to Chicago, where the commission men, instead of finding fault, only asked for more. They were just the pears to suit the purpose of the Italians, who retailed them on the street at high prices. The Duchess pear is also the leading variety in Genesee County, according to Mr. Irving Cook. It cropped well this last season, and sold at $2 to $3.25 per barrel.

Hardy Peaches.—The question was asked, "Are there any new peaches more hardy than the old sorts?" Mr. J. H. Hale said that some of our old varieties will endure 20° below zero, as for instance *Hill's Chili*, which is very hardy, and has not failed for twenty years. All of the Alexander type are very hardy and cannot easily be excelled by any of the newer varieties in this respect

The Elberta, from the South, is very hardy, more so than Stump-the-World, Old Mixon, or Mountain Rose, and these are hardier than Crawford; indeed it will rank with Hill's Chili and Alexander. The *Crosby* is also equally hardy with these; but it has the fault of overbearing, and then the fruit is too small. *Beer's Smock* is hardy and productive; *Steven's Rareripe* is hardy, but inferior in appearance and a poor cropper, and sometimes mildews and blotches.

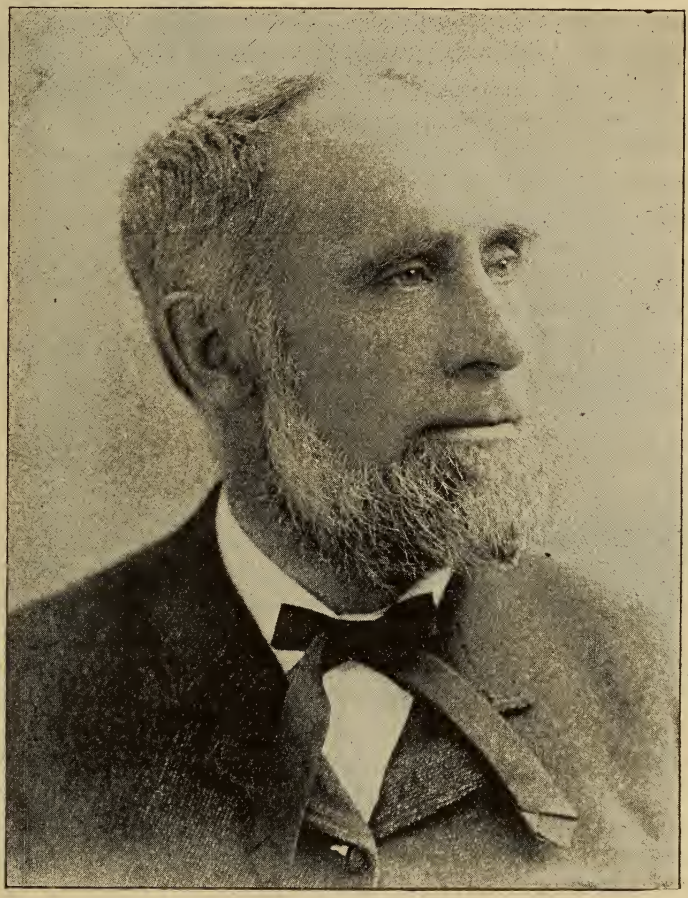


FIG. 640.—MR. S. D. WILLARD.

Mr. Smith, of Seneca Lake, said that in his district Steven's Rareripe was one of the hardiest and best of the white-fleshed peaches; and Elberta was one of the very finest of peaches for cultivation in Western New York. Mr. Willard said Hill's Chili was not very attractive in appearance, but it was the best canning peach that grows in New York State. At Geneva the canning factory has of

late been labelling the kinds of peaches they put up, and say they can sell this variety for more money than Crawford or any other variety they keep in stock.

Grape growing, according to Mr. Joselyn, was still the most popular industry in Chautauqua County, notwithstanding the low prices. The Union aided much in the sale of the fruit, and the low prices had brought grapes within the reach of the laboring classes. Last season the price on the average to the grower was 11 cents per nine-pound basket, which will probably be the average price of the future. The crop of 1892 in this county was 2,234 carloads, and in 1893, 2,587 carloads!

FIG. 641.—MR. J. H. HALE.

Apple growing, said Mr. Irving Cook, of South Byron, is now yielding us less profit than many orher products of the farm.

The German prune had given Mr. Purdy more profit than anything else on his farm; nothing is better for evaporating than this plum, and no trees more vigorous and healthy.

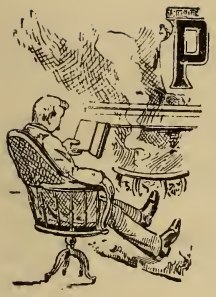
MUST THE ROBINS GO?

THE above is one of the questions that is now agitating my mind. For years I have done everything in my power to protect the robin. I have encouraged them to build their nests on my verandas, shot many a cat belonging to my neighbors in order to save them; but in return last year they took nearly all my cherries, fully half of my garden raspberries, and all of one kind of currants which I had fruiting for the first time. It is pleasant to see them around and hear them sing, especially in the early morning; but when we find that some one has to go, the fruit grower or the robin, then I say let it be the latter. There is no doubt that he is some good; he eats a white grub when he finds one, and will even strain his little neck pulling one out of the lawn, but there are other and worst pests more easily got at that he never touches, viz., cabbage and currant worms, and young potato bugs.

Why could not the Fruit Growers' Association import a sufficient quantity of bird netting to supply its members? I believe it can be bought for one cent per square yard in England, and our Government should allow it in free of duty. Even if we had to pay the duty it would more than pay the cost in one year. What say you?

St. Thomas. A. W. GRAHAM.

GRAPE PRUNING.



PROPAGATORS differ as to the best time for cleft grafting the grape vine, but probably it may be done with best success in spring, just before the buds begin to swell. Any one familiar with the ordinary method of top grafting the apple tree, will have little trouble. The vine is cut off three or four inches below the surface of the ground, split with a grafting chisel, and held open with a wedge until the scion is fitted to its place. The scion need not be over six inches long, and should have a wedge-shaped end, smoothly cut, to fit the cleft in such a manner that when it is allowed to close, the bark of the old and new wood will be in close union. Use no grafting wax; but, if necessary, tie the cleft with a string, and then heap the earth carefully about the graft, leaving but one bud of the scion above the surface (Fig. 642).

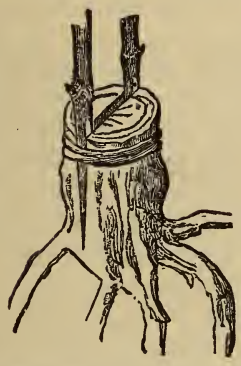


FIG. 642.—CLEFT GRAFTED GRAPE.

Or, if the stump is old and knotty, you may splice graft a smaller branch. Do this at a distance of two or three feet from the stump, and then lay the grafted branch down carefully,

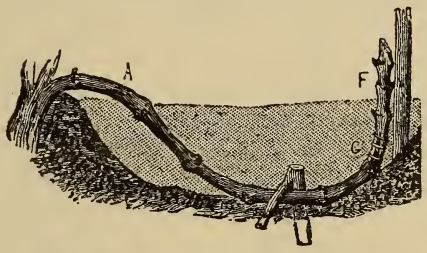


FIG. 643.—GRAFTED CANE OF GRAPE

fasten it in place with a peg, and cover the graft with earth, pressing it down firmly. Leave one bud above ground, and when you see signs of growth rub off all others between the branch and the main stump (see Fig. 643).

The earlier the scions are cut the better, while the buds are quite dormant; after they have begun to swell the scions would be useless. They can be kept in earth, or in green sawdust until needed. The wild vines can be grafted as well as the cultivated varieties.

RELATIONS OF NITROGEN TO FERTILIZERS. — Experiments have shown that nitrogen is essential to the growth of plants; that the quantities of nitrogen available as plant food are very small; that nitrogen is one of the first elements in the soil to be used up; that, of all fertilizing elements, nitrogen is and always has been the most expensive.

FARM BRIDGES.

FORTUNATE is the farm that has a stream of water running through it, for a brook or even a small rill not only brings many material advantages, but adds greatly to the attractiveness of a place. A much larger percentage of the farms of the country than one would at first thought suppose are crossed by running water, often necessitating bridges for the passage of farm teams, or a foot bridge for the family.

It is unfortunate that so many neglect properly to construct such bridges as are required, for in the often carelessly-built affairs that serve to span these streams, they miss both the element of safety and the element of good looks. Well-constructed farm bridges are capable of adding not a little to the attractiveness of a place. Throwing a couple of logs across a stream and covering these with a heterogenous collection of planks, or it may be of round and uneven saplings, does not subserve safety, convenience or beauty. The illustrations given herewith show how farm bridges may be constructed simply but strongly, and in a way to give an air of neatness to the work. Fig. 644 shows an under construction in which the centre of the bridge is supported by two lateral braces, whose power of support, arranged in this way, is very great.

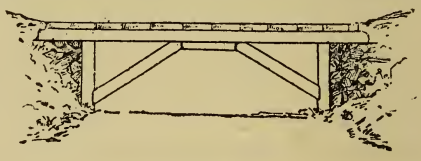


FIG. 644.

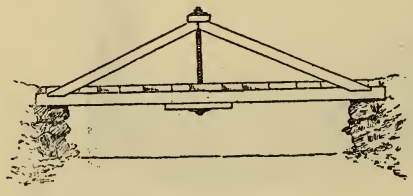


FIG. 645.

Fig. 645 shows braces arranged above the span, whose power is also great, the support being of the same nature as that shown in the preceding figure, but differently applied.

Where still greater strength is desired for the passage of heavy loads, a combination of these two forms will be effective, as shown in Fig. 646, where the upper braces support the middle of the span, and the lower braces support that portion between the middle and either end. The ends of the stringers in such bridges should rest upon well laid rocks to give permanence and stability to the structure. Foot bridges are often needed, and here it is possible to achieve some really artistic effects, for rustic work, so often inappropriately used, is here

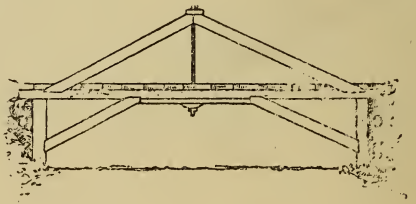


FIG. 646.

entirely appropriate to its surroundings. Fig. 647 shows a design for a foot-bridge, which may be used as a suggestion for a design for one's own. Pliant green withes form the sides above the flooring, and unpeeled trunks of small growth the portion below. Where slabs can be obtained with the bark still remaining upon them, they can be squared upon the edges, and used instead of boards for the flooring, thus adding to the rustic effect of the whole.

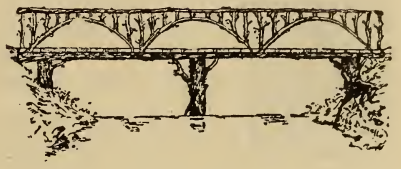


FIG. 647.

It is to be remembered that in all the figures given no attempt is made to show the entire bridge, but simply the elevation of one side. Such bridges will well repay their cost in the added security they give to men and animals, and in the air of business-like thrift which they give a place.—Country Gent.

Pruning Pear Trees.—Each year pear trees should receive a careful vigorous pruning. In December, cut the season's growth back from a half to two-thirds. This will generally leave about four buds on the new growth. Whether the trees be of a dwarf or standard variety this annual pruning should be given. Another thing: When pruning cut the branches so that the terminal bud will grow from the center of the tree, not toward it. Prune also that the terminal bud will not grow among other branches. Aim to prune so as to allow the largest amount of free air and sunlight. Sunlight will enhance the value of a barrel of large, red apples fully 50 per cent., and the same is true of pears, although the visible effect in the color is not so clear, yet the flavor is noticeably much improved. The Clairgeau is a variety that must have sunshine to mature properly. It is much like the Northern Spy apple in this respect. Annual pruning keeps a tree in a thrifty, vigorous condition of growth, and reduces the number of fruit spurs and buds. It is thus a system of fruit thinning as well.—Farm and Home.

Fertilizing Fruit Trees.—Fruit trees need as much care and as good manuring as any cultivated crop. Fruit trees especially give excellent returns for the manure given. When the trees are set out they should be well manured in order that they may get a good start. By well manuring, and carefully caring for an orchard, we not only get fruit early, but in abundance. In the case of dwarf fruit trees, whose roots do not penetrate very deep, a liberal dressing is absolutely necessary to obtain a good quality of fruit. As it is often quite difficult to obtain stable manure, sewage, or the like, we can get along just as well, and in some cases better, perhaps, by the rational application of artificial fertilizers, and in the case of orchards, we need not trouble ourselves so much about the mechanical condition of the soil.

RURAL MELANGE.

AS we are getting a little thawed out up here in the "cold north," we begin to think about the coming seasons' work, though we expect to have old winter shut his grip on us once more before he goes back to his icy realm within the Arctic Circle; yet we can talk and anticipate, if we cannot do much. Fruit growing in the Ottawa valley is a specialty, not a matter of course work as in more southern climes, hence we have to work with brains before we do much with hands as to the best modes of counteracting the power of the cold weather; though we have one advantage and that is more freedom from injurious insects than our neighbors further south. Then again the snow mantle often lays on late as a protection, but when you find the most of your novelties have succumbed to Jack Frost, novelties for which you have paid out hard earned cash, it makes you scratch your head under a "second sober thought," that it is best not to listen to *all* the fine talk with which your ears are entertained by travelling drummers for "reliable" nurseries. "Experience teaches a dear school but fools will learn in no other," is one of the wise saws which our juvenile comprehension first gleaned from Noah Webster's old "Elementary Spelling Book," half a century ago, and it has lost none of its vitality of fact by age, judging from recent results in the experience of ardent devotees in the work of fruit culture in the vicinity of Ottawa.

But *nil desperandum* should be every fruit growers motto who has "come to stay" in the work; and when one thing fails, try another, until ultimate success, financial and otherwise, crowns his efforts.

Small fruits not only pay best, but succeed best in this climate, as the snow affords them most protection, and in the market they are less affected by southern importations; and as to *quality* of fruit, what we do grow is quite on a par, if not above that which has had the benefit of stronger sunshine than we enjoy.

As to the management of raspberries, I find that a good profitable result is obtained by setting them in rows 7 ft. apart, 4 ft. in the row, letting them spread to 2 or 3 ft. wide, and keeping out the old wood yearly, and the leaders cut back not too low. Cultivate the remaining space between the rows, with a dressing of manure once in two or three years, and do not lay down for winter protection. Some of my neighbors take pains to turn up to four or five canes in a hill, tie to stakes through the warm season, bury down through the winter, etc., and complain that their raspberries *dont pay!* The reason is obvious enough, when there is not canes enough on a given space for them to pay on. In proportion to the ground occupied, my raspberries paid better than my strawberries, last season the latter being above the average crop.

My experience with strawberries is to cultivate on the matted row system. On flat rich soil I ridge up, after filling a furrow half full of well rotted manure

(this saves mulching), thus giving the water a place between the rows, if a winter thaw takes place, as ice frozen around the plants is a fatal circumstance, no matter how well covered they may be through the winter. I find it best not to cover with straw until spring, and that as fast as the snow mantle leaves us. By putting manure under the rows with six inches of soil above it, three good crops can be taken off before plowing down. After picking season is over, a good way to clean the patch is to have sharp hoes and cut the matted rows up to a foot wide, pull out old weeds and grass, and good fresh plants will grow for the next season's pick. A picket fence around the fruit garden, and the raspberry patch running through the middle helps to keep the snow drifted in to a good depth which is very desirable for strawberries. I am putting long manure around my young trees and grape vines now (March 8th,) before the snow goes for the three-fold reason; to keep the frost in and trees back from budding too early; to serve as a fertilizer; and to keep in moisture around the trees and vines, if the season turns out hot and dry, which is quite possible, nay even probable through this section, as the past two years we have had it rather wet for flat lands.

If we can anticipate the season with any degree of accuracy, we can "take time by the forelock" in many things; for instance we have a rich flat on which cauliflowers will succeed in a dry season, but on which last year they were a failure as they cannot bear too much moisture. As a rule, all vegetables, requiring strong soil to perfect them, must have a moderately dry location that they may feel out the right constituents to that end; lime and ashes can be applied profitably on damp soils to counteract the acidity which is largely a consequence where water lies any length of time, and where drainage cannot be effected without great expense.

We find onions a good paying crop if we begin with the hot-bed for transplants and keep up a succession for bunching through the season; and a good fall crop for marketing by the bag, through the fall and winter.

A winter supply of root crops, cabbage, celery etc., is a very good finale for marketing near a city like Ottawa, and, since potatoes have sold on an average of 75cts. per bag since digging time, other vegetables find ready sale.

But my *melange* is getting unbearably profuse, and I will close by correcting three errata in my article in the June No. of the Horticulturist of last year, entitled "Incentives to Agricultural Life." It should have been done before this, but it is not too late now. On page 210, fifth line from the top, for "administration," read admiration. In seventh line, for "obstruction," read observation. In the nineteenth line, for "aimed," read amid.

L. FOOTE.

Elberta, according to some authorities, is one of the hardiest of peaches. It is excellent in quality and the tree is productive.

THE BLACK KNOT.

THE following letter appeared in a recent issue of the St. Mary's *Argus*, and was sent to the CANADIAN HORTICULTURIST for reproduction by Mr. T. H. Race, believing that it might at least awaken a new interest in the subject, whether the theory advanced be accepted or not. The contribution is from Mr. T. W. Gibbs, of Oshawa, who has evidently given considerable study to the subject:—

On pages 137 and 138, vol. 4, 1881, of the CANADIAN HORTICULTURIST, Mr. N. Hendrickz mentions a Belgian writer, the author of "God, His Providence in His Insects," who describes in that work the insect which is the cause of the black knot. Mr. Hendrickz, unfortunately, gives a very brief description of the little pest.

I think, Mr. Editor, that the scientific professors in our colleges and the entomologists have a good deal to answer for. If the average farmer had been told that the cause of the black knot was a very industrious insect, instead of a fungoid disease, there might have been a united effort made to check its ravages, but having been told that a fungus was the cause, despair has seized the average fruit grower, and the industrious pest has been allowed to multiply at his own sweet will, causing a loss annually in this Canada of ours of hundreds of thousands of dollars in fruit, to say nothing of trees. During the past thirty-five years I have been trying to persuade the fruit growers that an insect was the cause of the trouble and the "black fungus" the effect, but with very partial success. In the past two years I have talked with thousands of fruit growers, and in the county of Brant I have found 75 per cent. of the fruit raisers aware of the true cause; in the town of Goderich the same knowledge exists.

In the town of Paris I met the only man, besides myself, who had ever observed the fully developed insect. In appearance it is very similar to the "Curculio," but a little softer and a little more pleasing to the eye. I have met with one or two observant men who have seen it in the sheet along with the curculio, when they have jarred the trees for the latter insect, but I have never yet met with a man, besides myself, who has seen the mature female deposit her eggs. On the young branches of the plum and cherry she scores downwards in parallel lines one or two inches. Her cutter is entirely different from the curculio; the latter makes a crescent-shaped cut in the fruit, and then deposits the egg in the curve. The black knot insect has a cutter projecting from the proboscis, very similar to a phlegme. After cutting deep enough the outside bark curls off on both sides of the cut, then she deposits her egg in the soft succulent inner bark. In warm weather the grub soon hatches and immediately begins to eat its way into the middle of the limb; a spongy gall begins to form, and it is weeks, aye months, before the excrescence becomes black—in fact the fungus does not and cannot exist until the excrement of the grub exudes with the gum from the wound, making a suitable soil for the fungus, any more than the edible mushroom can be propagated without horse manure. If any observant man will make a careful examination of his trees in early June, he will see some small tender branches of his cherry and plum trees with the bark curling off on both sides. Careful examination will disclose the egg. I have many times seen the whole performance, and the egg finally deposited. Now, I will defy any man to propagate or innoculate plum or cherry with the fungus.

How is it that the fruit growers have never thought to enquire why, if their theory was correct, the fungus never propagated in the wounds caused by men's boots, ladders, etc.? It never did and never will *unless* the egg is laid and the grub ejects its excrement with the gum; later on the fungus appears.

Prof. Maynard (vol. xv. fol. 229 CANADIAN HORTICULTURIST) says: "The diseased wood should all be cut out or the disease will extend." I state emphatically it is not a disease, and if you cut the *grub* the *fungus* will perish for want of proper nutriment.

It is impossible for any man to find, either in plum or cherry, any black fungus one quarter of an inch beyond where the grub has eaten its way into the wood, and ejected its excrement. Cut out the grub or grubs (I have frequently found three or four), leave as many mycelium threads (see Prof. Panton) as you please, not another fungus spore will strike root; they all perish for want of nutrition, in other words, want of excrement.

The grub is creamy white, with a brown head; when fully grown, about three-quarters of an inch long; has strong sharp mandibles; has six feet in front, terminating in sharp

points, dark amber color, curving backwards, just the shape of a buffalo horn, giving the grub a splendid hold while cutting its way into the wood.

If turpentine is applied freely enough to the excrescence, the grub will die without cutting out, and the limb will heal over, but the safest remedy is the use of the knife. Burn everything cut off and apply shellac to the wound.

If any entomologist wants to get a specimen of the mature insect, cut off the knots in May, on live limbs, place them in a glass jar, and in the hot weather you will see them eat their way out of the wood, slough their chrysalis and come out perfect flies.

Answers to the above on the origin of Black Knot by James Fletcher and John Craig, Central Experimental Farm, Ottawa.

We are pleased to learn from the letter of Mr. T. Willis Gibbs that much interest is being manifested by the farmers and fruit growers throughout the country with regard to the origin and dangerous character of the Black Knot, so seriously affecting our plum and cherry trees. Every inducement which incites a desire among orchardists to study this enemy in all its bearings, is a source of congratulation, as a study of its habits cannot fail to reveal its dangerous character, nor fail to point out the only remedy known thus far, by the thorough application of which it may be successfully combated. It is for this reason then, viz., that of directing attention to the necessity of combined and co-operative action in fighting this enemy, that it is deemed advisable by the writers to review briefly the life history of this disease, stating concisely the facts upon which our belief in the fungous nature of the disease is based.

It may be well to state here that the disease known as Black Knot was carefully studied by Dr. Farlow, of Cambridge University, about twenty years years ago, then and now the leading mycologist of America. We are indebted to this eminent scientist for much valuable data on the manner in which it grows and multiplies. Not the least important part of his investigations was that which at once proved its fungous nature and the possibility of transmitting the disease by inoculation from wild forms of cherries to cultivated garden and orchard varieties. Dr. Farlow states in a bulletin of the Bussey Institute, issued March, 1876, that "we have made direct experiments to show that the spores of the knot on the choke cherry *will germinate and produce the knot in healthy plum trees.*" He says nothing of the necessity of insect agency or assistance in developing the knotty growth.

With regard to the statement that the excrescences are entirely due to the attacks of an insect, the evidence submitted by Mr. Gibbs is very unconvincing to us. His description, too, of the insect shows that he has not devoted much time to the study of insects. We hope that next year he will make an effort to send specimens of what he believes to be the cause of black knot to the Editor of the CANADIAN HORTICULTURIST for identification. We will merely submit two facts: (1) At Ottawa the black knot is by no means a common disease, and in many instances there are no insects whatever to be found at any time in the knots. 2. Where the disease is abundant, the galls are as a rule much destroyed by insects. This injury is caused by various insects belonging to

different orders. Prof. Webster, in "Entomological News," for October, 1893, records having bred nine distinct species from one lot of knots collected in a single garden, and this collection did not include the plum curculio, well known to breed in the knots, as well as in the fruit.

FIG. 648.

The black knot is a gall or woody growth, caused by the attack of a parasitic fungus. In this gall when fully or partially developed, many kinds of insects make their home and feed upon its substance. Galls upon plants are caused either by parasitic plants or insects. Gall insects are divided into gall makers and inquilines, or guest flies. The former of these cause the gall, and the latter only live upon its substance. Both of these classes of insects are frequently infested by parasites, and in the case of the black knot, which is a fungus, all insects bred from the knots would be inquilines or parasites.

In an excellent bulletin on this subject by Prof. B. D. Halsted (New Jersey Ag. Col., No. 78), the life history of this parasite is given at length and an appeal is made to fruit growers to induce them to make greater efforts to eradicate so pernicious a foe.

Prof. Halsted says: In the first place, let the reader get a clear understanding of the nature of the enemy that it is proposed to conquer. There is no question whatever about the black knot being caused by a low form of vegetable growth called a fungus, that sends its minute threads through the substance of the twigs and branches. It is, therefore, necessary to gain a knowledge of this fungus, and for this purpose the accompanying engravings have been prepared. While it is generally assumed that the appearance of the disease is familiar to most of our readers, it has been thought well to give some illustrations. [These illustrations have been kindly lent to us by Prof. Halsted for this article.]

The beginnings of a young knot are first seen in a manifest swelling of the young twig, which is soon followed by a cracking of the bark, and in the rifts thus formed the threads of the fungus come to the surface and clothe it with a covering of olive filaments bearing multitudes of spores. A young branch is shown in Fig. 648, that exhibits the characteristic swelling of the initial knot and the cracks in the bark in which the spores are borne. A highly-magnified portion of a rift in the bark is shown in Fig. 649, in which the superficial stalks and their spores are seen. These spores are carried in all directions by the wind, and falling upon the surface of young shoots, germinate, send their filaments through the bark into the growing ring of soft tissue beneath and institute another knot.

As the season advances the young knots and the fresh growth of older ones lose their olive, velvety appearance, turn a dark color, and develop a hard incrustation upon the surface. Within the substance of this black and brittle layer many spherical pits are formed, as shown in Fig. 650, and as winter advances, minute sacs are produced upon the wall of the cavity, that toward spring bear each eight oval bodies that are known as sac spores. These escape from their long sacs and pass out through a pore at the top of the cavity, and are then ready to be carried by the winds to the surface of a young cherry or plum twig, and thus begin another knot, which, in the course of time, produces a new crop of summer and another of winter spores, and thus the disease is preserved and propagated. In Fig. 651 is shown two of the sacs with the

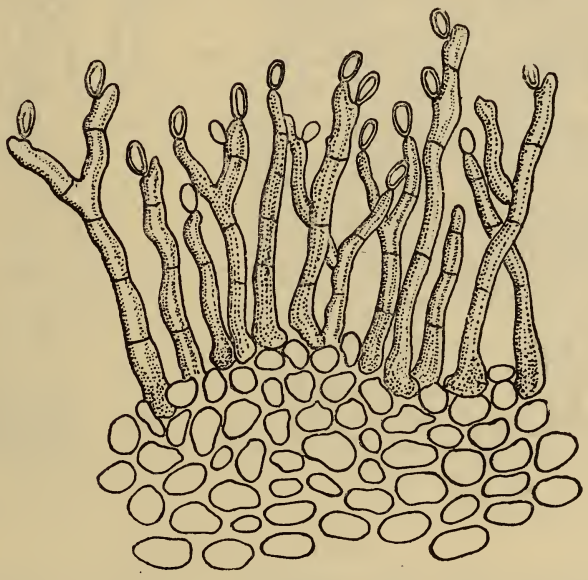


FIG. 649.

eight spores in each. A free spore is also shown in the process of germination. It is a fact that cannot be too emphatically stated here that the ascospores above mentioned are matured during the winter months, and that they will continue to ripen when the knots have been removed from the tree and left undestroyed upon the ground.

There are other forms of spores besides the two already pointed out, but their presence or absence does not change in the least the treatment that should be given to diseased trees, and therefore may be omitted from special mention The fact of their existence only strengthens the previous conviction that in the black knot we have a fungus perennial in its character and wonderfully provided with methods of spore formation for the rapid spreading of the malady at all seasons of the year.

This pest is known to attack at least eight species of the genus Prunus. The appearance of the knot varies somewhat among the various species, but as Dr. Halsted points out, "it has been demonstrated by direct inoculation, that the spores from the knots of the choke cherry will produce the quite dissimilar excrescences common to the garden plum, a fact that in this connection it is important to know.

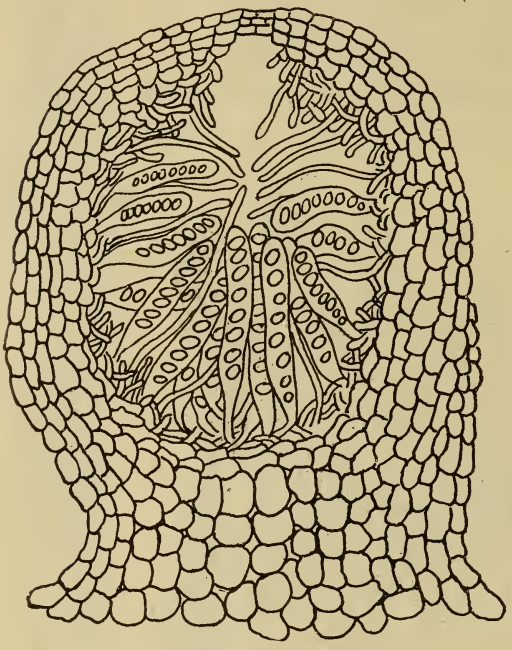


FIG. 650.

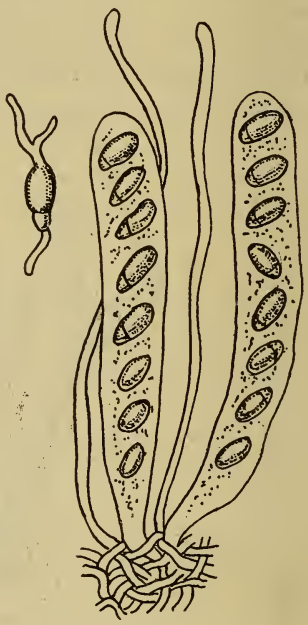


FIG. 651.

RECAPITULATION.

1. The fungus which causes the growth of the knots, was described by the celebrated German mycologist, Schweinitz, some 70 years ago. He was of the opinion, however, that the knots were caused by some gall-producing insects, rather than by the fungus which he found upon them.

2. Several species of insects have been observed, inhabiting the knots, but none of them belong to the gall-producing kinds, and most of these insects are also found upon other trees which never produce the knots.

3. A characteristic fungus is invariably found in the end fronting on the knots, from *their earliest* to their latest stage, and nowhere else.

4. The life-history of this fungus was carefully worked out and published by Dr. Farlow, in the Bulletin of the Bussey Institute, in 1876. At this time its communicability between wild and cultivated forms of the plum and cherry was proved by artificial inoculation.

5. The first manifestation of the presence of the disease is in the fall, and appears as a slight swelling of the bark along the branches. A microscopic examination of the tissues of these swellings reveals the presence of the mycelium of the black knot fungus *Plowrightia morbosa*.

Query.—Why should the excrement of various insects invariably develop a certain kind of fungous growth?

There is no better course of treatment known than that outlined by Mr. Gibbs, and it would be greatly to the advantage of the fruit interests of the country if orchardists would conscientiously carry out his recommendations.

APPLE AND PEAR SCAB (Fusicladium dentriticum).

N order to secure the best results from spraying for this most destructive fungus, it is necessary to begin operations very early. Just before the leaf buds open out all the trees should be sprayed with a solution of *copper sulphate*, one pound to 50 gallons of water. This mixture must not be applied to the foliage itself as it would damage it very much, and therefore for later applications to leaves and young fruit the *Bordeaux mixture* is commended. The latest formula, as given in Prof. Shutt's paper, at our last annual meeting, is as follows :

Copper sulphate (blue stone)	4 lbs.
Lime	4 lbs
Water	50 gals.

The fresh burnt lime is allowed to slake, and then well stirred, with sufficient water to make a thin creamy mixture. This is now strained through coarse sacking into a barrel containing the dissolved copper sulphate, and the whole stirred and made up to 50 gallons. The sprayed liquor evaporates, leaving the copper on the foliage as a hydrate.

Later in the season, when the fruit is nearly full grown, and this copper residue would render it unsightly, the Bordeaux mixture need no longer be used, but in its place the *Eau celeste*, for which Prof. Shutt gave us this formula :

Copper sulphate	1 lb.
Strong Ammonia	1½ pints.
Water	22 gals.

The evaporation of this fluid leaves upon the foliage and fruit basic copper sulphate and ammonium sulphate.

The *Ammoniacal Carbonate of Copper* is by many preferred to the Eau celeste, and is prepared as follows :

Copper carbonate	5 oz.
Ammonia	2 qts.
Water	50 gallons.

QUICK GROWING TREES.

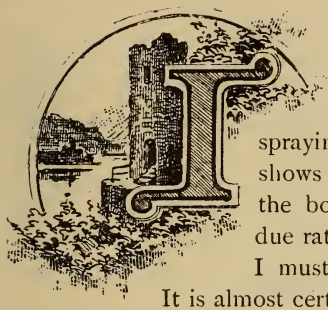
I SEE that Mr. L. B. Rice, of Port Huron, under the above heading in the March number of the HORTICULTURIST, rather deprecates the willow as a wind-break and as an ornamental tree. For the former, in this part of the Province of Quebec, it has been a great success; rapid in growth, erect in form and branched to the ground. About twenty-five years ago, the white willow hedge craze had a great run, and hundreds of miles of it were planted from small cuttings, about ten inches long. Very few of these hedges were kept clipped, or attended to in any way; but the wind-screens that have resulted from them in many a drifting road district, and the handsome rows of shade trees, where they were thinned out along the roads, have given them a well-deserved popularity here; and the trifling cost at which a large plantation or long row can be set out, will always be a strong point in their favor. They are the first to leaf out in the spring and the last to lose their foliage in the autumn, and though they may not produce as much honey as the basswood, their bright, early, golden blossoms are where the bees derive their first store of pollen; and as individual trees along a village street, few there are which present a more picturesque appearance than well-grown willows. If their roots choke drains, so in a worse degree do elms, but we could hardly condemn the elm on this account. The Carolina, or broad-leaved poplar, is a very rapid grower, and so also is the Russian poplar, introduced by the late Charles Gibb, and both take very easily from cuttings, and either are far preferable, as far as brightness of foliage is concerned, to the Balsam poplar, or so-called Balm of Gilead. But let us not confound with these the common, so-called poplar, or aspen, pretty as a shrub but worthless as a tree.

Sherbrooke, Que. W. A. HALE.

Whitewashing with the Spraying Pump.—The use of Bordeaux mixture in the spraying pump suggests that the machine can be used to good purpose in spraying whitewash upon greenhouse roofs, barn basements and fences. We now apply all the whitewash upon our larger glass roofs by means of a pump and nozzle. The whitewash is made in the ordinary manner, of lime and water, and is diluted to about the consistency of thin cream. If a large surface is to be covered, especially if it is difficult to reach, a direct delivery nozzle, like the Boss, or a common discharge nozzle, is used, and the operator stands several feet away. But if it is desired to cover the surface evenly and neatly, the McGowen nozzle is most satisfactory.—Cornell Bulletin 61.

FOR ROSE SLUG.—Try a mixture of two ounces of hellebore to two or three gallons of water.

SPRAYING IN 1893.



It seems hardly necessary, in the present year of grace, that anyone should write in defence of spraying, but Mr. Graham's communication on page 47 shows at least that the subject has not yet been sifted to the bottom. His poor success was, however, probably due rather to faulty methods than false inspiration, but I must admit it is hard to see where the fault came in. It is almost certain, however, that it was either in the Paris green or the Bordeaux mixture. If the lime in the mixture were insufficient to convert all the copper into hydrate of copper, either from lack of quality or quantity, the copper sulphate would burn the leaves, and by that means might kill the tree. On the other hand, if the Paris green were of an inferior and possibly more soluble variety, the damage would be explainable in that way; or, perhaps—and here may lie a source of great danger in the use of Bordeaux—it may be that the Paris green is dissolved by standing even a short length of time in the limy mixture. It is well known that alkalies dissolve arsenic with tolerable readiness, and it is probable, though I do not know positively, that a mild alkali like lime may do the same thing, and if there is any considerable chance of that happening, it will be a bar to the use of Bordeaux that will suit some people very well, as it is the dirtiest and most inconvenient and disagreeable method for the use of copper as a fungicide. Some day we may use a plain solution of a copper salt used with equally good effect, and in fact statements of success have been written by people who have used sulphate of copper alone, but so far as I know none of the Experiment Stations have followed the matter up. I have used copper in ammoniacal solution with the best results, even with the admixture of Paris green (which does not at all agree with my theorizing above !) and while I have lost a few plums by curculio, I have had to thin out about one-third to one-half of the remainder by hand on the best trees. There is no doubt that the use of Paris green with ammonia may be dangerous, but by means of considerable care I have never had any untoward results. The poison has always been added just at the moment of use; and by using not too great an excess of ammonia, and delivering a fine spray, I do not think any ammonia whatever reaches the leaves in the spray, and the results have been the best.

Mr. Graham makes a good point in using Paris green for the first spraying on gooseberries and currants. It is more easily applied and probably more effective than hellebore. It reminds me of an experience which is noted in my gardening record :—

On May 21, '91, "Syringed bushes with hellebore; this should have been done on 14th; some branches are stripped nearly clean." On May 17, '92, "Put Paris green on currants and gooseberries, tho' no insects visible yet," and

that year I had no first crop of "currant worms." On May 23, '93, "Noted about 100 very small sawflies in a single leaf of gooseberry," and a few days later they were sprayed and killed. The lesson to be learnt is that prevention is better than cure. It was no more labor to spray the bushes on May 17th, '92, than on May 21st, '91, but in the one year my bushes had all their leaves to elaborate sap with, and in the other year they hadn't

W. E. SAUNDERS.

London, Ont.

ARRANGING GROUNDS.

THE first essential of success in arranging grounds is the ability to recognize the characteristic and salient features of a place so as to work in harmony with them instead of coming into conflict with nature. To this end the individual quality of the surroundings of any place ought to be carefully studied before a tree is planted, a structure is erected or a path is laid. Few places, even when comparatively small, are so dull or monotonous that they are without a single feature which is worth emphasizing, and toward which, as a centre, the artist's thought is constantly directed. This may be a distant prospect, or it may be a craggy ledge, a strip of woodland, a noble tree, or only a pleasing sweep of surface. When this commanding feature is selected, all the other elements in a consistent scheme of landscape gardening are made subordinate and accessory to it. Of course, this central idea must be distinctive to be interesting, and in carrying it out, if it is to remain distinctive, we must not follow precedent too closely. Men too often plant certain trees in a certain way because other people have set them so, and in this way they are apt to make their estates humdrum and monotonous from lack of individuality. True, if a place is simply one of a hundred similar ones, like a regulation house and lot in a suburban town, there is little to do with such a featureless subject besides some formal planting, whose lines will be determined mainly by the size and position of the house; and such arrangements, when guided by good taste, can, at least, be made interesting.

In a region, however, of open farm-land, or in a woodland opening, or near the sea, the proper way is to study natural effects and subtly to conform all artifices to the suggestions of nature in the neighborhood. A great mass of rock, instead of being concealed by trees and shrubbery, should be made the most of in the outlook, and its lines of rugged strength should not be softened away, or its proportions belittled by any pettiness in its surroundings. If the approach to a dwelling is through a native forest-growth, this naturalness should not be marred by the introduction of species which do not belong to that region. There are enough native under-shrubs which are desirable in themselves, and which will be doubly so in such a place, where they help to emphasize the absence of artificiality.—Garden and Forest.

HEDGES.

IN the Fruit Growers' Association Report of 1892, D. Nicol discourses upon "Hedges." I need not repeat what he has so well said in that article. There are pros and cons in respect to hedges, as there are in respect to any style of fence. The cost of hedge plants is a mere trifle. Fifteen to twenty-five cents will purchase good plants for a rod of honey locust hedge. About five times as much will purchase plants for an arbor vitæ hedge. To plant these in prepared ground along the straight side of a straight furrow, is a short job. The annual expense is not great, but it must be considered.

I like to leave a wide, cultivated border, and run a corn cultivator along each side half a dozen times each year for some few years at least. This, with the necessary hoeing, costs but little. The hedge should be cut back each spring; after a few years we use hedge shears once or twice each year. This job is best done after a sharp shower, which perchance prevents for a time the usual work on the farm. I find it so attractive that I rarely give up the shears till noon. He who is not prepared to give his hedge attention from time to time each year should not plant one at all.

The most serious objection to a hedge is the fact that its roots unfit the adjacent lands for many crops Grass crops and pasture are not much affected. A hedge separating a road or a lane from a pasture field is therefore quite admissible. Where a head land is used as a driveway, or to turn upon with a cultivator, a hedge answers very well. At the rear of my place a honey locust hedge separates my head land from a lane which is much used by cattle. The plants stand upright, and having been pretty well cared for and sheared, there has been no need of tipping or bending them sideways in the hedge. To make assurance doubly sure, we have stretched one barbed wire within the hedge, three feet above the ground. Each and every cow has seriously considered the matter, and concluded not to go through that hedge.

Hedges have some advantages. Their cost, including annual care, is not great, while they endure for a long time. They are wind proof, and make a low wind break. They are beautiful and interesting; with one or two barbed wires they are an effective fence. I have for years used a locust fence along the road without any wires. A hedge is not reliable if planted near to a row of trees such as we often see along road sides. Try the hedge in one place and the trees in some other place.

Mr. Nicol makes one serious mistake. The honey locust is not possessed of sprouting proclivities. In this respect it is as virtuous as the ordinary forest trees. We have in Stamford Township a good many miles of honey locust hedge of various ages. Although planted upon hard clay much of it is very good fence. Where much neglected it has but little of beauty or utility. The men, rather than the fence, are at fault in the latter case.

Mr. Nicol has well stated the merits of arbor vitæ and other hedge plants. A compact arbor vitæ is for this purpose an improvement upon the common cedar. A nice hedge may be made with Norway Spruce, but we rarely see one. Norway spruces are largely used hereabouts as windbreaks. These in fifteen years reach a height of from twenty to thirty feet.

Niagara Falls South, Ont. F. MORDEN.

KEROSENE EMULSION.

This emulsion consists simply of a mixture of soaps-suds with twice the quantity of ordinary coal oil, made as follows :

Kerosene (coal oil)	2 quarts,
Rain water	1 quart,
Soap	2 oz.

Boil the soap in the water till all is dissolved ; then, while boiling hot, turn into the kerosene, and churn it constantly and forcibly with a syringe or force pump for five minutes, when it will be of a smooth, creamy nature. If the emulsion be perfect it will adhere to the surface of glass without oilness. As it cools it thickens into a jelly-like mass. This gives the stock emulsion, which must be diluted before using with nine times its measure, that is 27 quarts, of water. It will be found to mix much more easily if done at once, before it cools. The above proportions give three quarts of the stock emulsion which with 27 quarts of water added, make up 30 quarts of the mixture ready for use.—Report by PROF. JAMES FLETCHER.

Constant Cultivation.—I noticed particularly in the peach orchards the present season that where the most thorough and liberal culture had been given, the trees suffered least from drought, and the fruit was of larger size and better quality than in the orchards where it was not possible to keep up the culture, after the growing fruit had so weighed the limbs that it was impossible to work among the trees. In the cultivated lands, the fruit kept on growing all through the season, but in the uncultivated orchards it was at a standstill for six weeks, until the rains came, and this simply taught us another lesson on culture.—J. H. HALE, in Strawberry Culturist.

FRUIT GROWING CONGENIAL TO SOME.—After forty years experience in business, I have no hesitation in saying that if I were commencing life, I would prefer fruit growing, after acquiring a scientific knowledge of the business, to any industry in the country—for health, wealth, and all that makes a success of human life.—J. W. BIGELOW, Wolfville, N. S.

SMALL GREENHOUSES.

OW that the frosts of winter have made the outdoor garden mostly a study in sepias, consolation is found in the genial temperature of the greenhouse, and I wish to make a plea to flower fanciers and owners of small places to have one of these, no matter how unpretentious. While there is now not one greenhouse to a thousand gardens, this important adjunct would often be added if it were generally known that a small house is not an expensive structure, and that the maintenance is a trifle quite within the means of limited purses. Modest things are the most that many of us can compass in this world, and to wait for ideal things is simply to be ever without them. Granting that a greenhouse is desired, the most practical plan is to go ahead and build one, taking heed it shall not be a burden either in the first cost, or so extensive as to require much labor for daily care. It is well to locate the greenhouse near the dwelling, as it can there be better enjoyed. If the heater can be placed in the cellar it will be a great advantage, both in saving space, in keeping dust away from the plants, and for convenience of attention to the fire. A greenhouse is a space enclosed by low walls with a sloping glass-roof, in which there must be arrangements for ventilation. The walls are best and most cheaply made of a double thickness of boards with a lining of building-paper. These walls should be nailed to upright posts at the corners, and to others at distances of three or four feet. A drip board should be nailed on the top of each side wall at the same slope as the proposed roof, and on its lower edge a narrow projecting strip must be nailed to serve for a gutter. A two by six inch board will make a good ridge for a small house, and may be adjusted at the proper height and in the centre, or at one side, as it is intended to make a span or three-quarter span roofed house. If the house is to be covered with garden sash it will be necessary only to fasten a narrow strip, say, three-quarters by two inches, at every three feet; but for a glazed greenhouse, sash-bars are mortised in the ridge and drip-board, at proper distances to receive the glass. Cross-bars will be necessary to meet lower bars of ventilating sashes. The ends of the house are finished with sash-bars, in which the glasses should be fastened and butted, rather than lapped. This class of house may be built by any handy man used to carpenter's tools, and will cost, for materials in a house ten by fifteen feet, about $75. It will be found preferable to have side lights on the side walls, and these sashes will add a little to the cost. It is advisable to have the inside of the house and all joints covered with white-lead in oil, but for the outside I prefer emerald green in a private garden. This color wears well, and the house is not such a staring object in the garden. It is difficult to see why a greenhouse should be painted

the usual white, for, at its best it is simply a necessary garden cover, which should be made as inconspicuous as possible. The heater and pipes for a ten by fifteen foot house, if well bought, should cost about $50. A properly made base-burner will require attention only twice daily, and should keep the house at sixty degrees in this climate on half a ton of coal a month, or even less if the fire has more attention. To sum up, then, for a capital expenditure of, say, $200, or less, and a yearly expenditure of $15 to $20, a greenhouse may be had which will give profitable returns of flowers and plants at all seasons, and be a source of endless pleasure. The work connected with such a house is not beyond the strength of the daintiest of the tender sex, if only some one can be found to care for the ashes and wash the pots. The daily routine is mostly an inspection and proper watering of each plant, and to one who knows his plants and enjoys them, this routine is a daily recurring pleasure, and not a task.—Garden and Forest.

We take pride in placing in the hands of our readers a good portrait of His Excellency, Lord Aberdeen, who, though so short a time among us is already one of the best loved of all the Governor-Generals of Canada. Fond of physical exercise, affable in disposition and youthful in appearance, he is a favorite with all who know him ; and Canadians of every party, creed, or social position, are alike his most appreciative and loving subjects.

Nor less loved and admired is Her Excellency, Lady Aberdeen. Descended from the ancient kings of Scotland, and also from those of Ireland, it is no wonder that she has taken so deep an interest in the social and national prosperity of the Irish people, as was shown at the World's Fair in her Irish village which stood at the entrance of the Midway Plaisance. Those of us who visited it, found this village one of the most satisfactory of the attractions of the Midway Plaisance, showing both the Irish industries themselves in actual operation, and Irish character represented by numerous fine young Irish women, who all spoke in the highest terms of their distinguished patroness.

In His Excellency, Lord Aberdeen, the fruit growers of Canada may claim a brother, and one who will ever do his utmost to favor their commercial prosperity ; as is well shown by the interest which His Excellency manifested in our fruit exhibit at Chicago.

Renewing Strawberry Plantations. — To renew old plantings, on thickly matted rows ; just after harvest, with a sharp plow, cut away all the plants except those that will remain in a four or six inch strip along one side of the old row ; thin to proper width, and treat as a new planting. By renewing each season in this manner, on choice land, six, and even eight successive harvests may be made from the same soil before it goes to other crops.—Miss. Exp. Stat.

SOME GOOD PLANTS.

Fig. 651.

THE Yucca filamentosa, or Adam's needle, seems to stand our cold winter better as it gets older. It makes a nice evergreen plant, and in summer (if the roots are not disturbed by digging) will give an abundance of flowers on strong stems, well raised above the plant to the height of four or five feet, and I have never yet seen them broken by the wind.

The Japan Iris is a new type of the old Flag, with double and single flowers of various shades and of different colors, making a grand addition to the list of border plants, and giving an abundant supply of bloom for a short time. They do not succeed well in a stiff clay, or on a too dry sandy soil, a dark sandy loam suits them best.

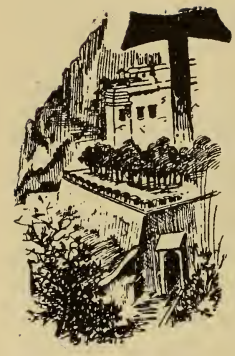
In *Pæonies* some of the newer kinds, with their fine markings will well repay the extra cost, and are a magnificent sight when in flower. They require little attention, but need a well-drained garden, a liberal supply of well rotted manure each fall, well worked in around the plant in spring.

The *Perennial Phlox* is another of which there are some fine kinds, and, like the pæonia, will give an abundance of fine flowers, if treated in the same way; but when flowering, if the season is dry, they should be mulched with coarse grass, or partly rotten straw and watered occasionally. They suffer in very dry seasons, but will well repay a little extra trouble.

Fernhill, Ont. J. M. Waters.

Ever-Blooming Climbing Roses,—Roses, hardy enough to stand considerable frost, and to serve as climbers are scarce, but one of the best is Gloire de Dijon. This has often been known to get through safely when the thermometer has fallen to zero. It is a rapid grower, and in a few years will cover the gable of a two-story house. The delicious fragrance of the tea rose, one of its parents, is abundantly displayed. The rose, William Allan Richardson, is said to be a successful competitor with Gloire de Dijon in the old world. Has any one had good experience in this country with it?—Meehan's Monthly.

FERNS.



THE culture of ferns is now receiving considerable attention, but not nearly so much as it would if they were more generally known. The varied and graceful form and beauty of their fronds, make them exceedingly attractive objects for the window garden, the rockery, and ornamental plots. Throughout the world there are about 2.500 known varieties, about fifty distinct species of them are indigenous to Canada. They can be transplanted from their habitats without much risk of loss, and are easily managed, being seldom attacked by insect enemies, the plants endure for many years.

Ferns are of all sizes, from less than one inch to several feet in height, nearly all cryptogamous. Some kinds have creeping rootstocks by which plants are multiplied. Some kinds produce minute bulblets on their leaves, and which quickly form plants when planted in fine moist earth. The walking fern propagates itself by forming plants at the tips of its leaves turned down to the ground. Only one kind is entitled to be called the flowering fern, (Osmunda regalis) and its beauty does not so much consist in its flowers as in its leaves.

The tree fern grows to a height of many feet, but it can only be grown in a warm climate.

The bird's nest fern, (Osmunda Struthiopteris) of Russia, forms convenient accommodation for wild ducks at breeding time.

The female fern (Pteris Aquilina) is said to be an effectual remedy for the evil of the tapeworm.

The common polypody (Polypodium Vulgare) was employed by the ancients as a purgative, and is recommended as a preventive of melancholy and insanity, but its effects I cannot vouch for.

I do know, however, that for intermixing with cut flowers; for window gardening; and for decorating the dinning table, ferns fill a place which cannot be supplied with any other class of plants known at present.

I have seen a Wardian case 3x2½ feet containing 22 distinct species of exotic ferns, besides some mosses, wintergreen and violets; and it afforded the owner, as well as his family and friends a great deal of pleasure at comparatively small expense.

For the embellishment of cemeteries, parks and pleasure grounds, ferns are admirably adapted, whether planted in clumps, vases or around the bases of the trunks.

Some have been discouraged with the growing of ferns, because they had undertaken to grow tender leaved kinds in places exposed to parching winds.

The common brake or bracken, endures almost any exposure without

much injury; but the Maiden hair fern, (Adiantum pedatum), and many of the aspleniums are readily blighted by exposure to hot drying winds. Nearly all the ferns thrive best under partial shade and good shelter.

Some of the handsomest specimens of polypodium I have ever seen, out of a fern conservatory, were growing on the shady side of an artificial rockery.

Ferns are easily cultivated when the essentials are complied with. I have seen some thriving remarkably well in rustic flower stands, and the sword fern needs nothing better than half of a nail keg.

In their natural abode ferns are generally growing on land which has never been impoverished by cropping, hence it is evident they like a soil rich in humus. The most suitable kind of new soil for them is a mixture of leaf-mould, decayed turf and sharp-sand, nearly equal parts.

During the season of growth, a liberal supply of water is needed, at the same time stagnant water in the soil is disagreeable to them and good drainage is necessary. Plants growing in pots, boxes or fern cases, may be thoroughly drained by placing over the holes in the bottom, pieces of broken flower pots or charcoal, over this should be spread some moss to prevent the soil mixing with the drainage, thereby preventing the water from passing freely off.

Cataraqui. D. Nicol.

Bulbs after Flowering.

Answer to Query 623. By Mr. C. W. Young, Editor of the "Freeholder," Cornwall.

Hyacinth bulbs can be flowered twice in the house in pots. They can be kept in the pots when done flowering, and in September or October well watered and put in a dark place in the cellar, needing nothing further except to bring to the light in about four or six weeks. Narcissus of all kinds, and tulips, can be treated the same way, or they can be shaken out of the soil when dry, and put away in a dry place till time to plant in the fall. They will not flower well more than two years in the house, and the second year bloom will be inferior. Crocuses will not bloom well twice in the house. Freesias, lachenalias and other Cape bulbs should not be taken out of the pots, but kept growing, if possible, as they improve from year to year. Bulbs of any kind grown in water are not much use for any purpose afterwards, but if not rotted it would do to plant them, and also bulbs flowered in earth in the house two years, in some corner of the garden, where they will continue to bloom in a fitful sort of way for several years. The small bulblets may be planted with the others. They may or may not come to anything, according to what kind they are.

PRIMULA OBCONICA, OR JAPANESE PRIMROSE.

THE great value of this plant is too little known, it is undoubtedly the nearest to a perpetual bloomer of anything that has yet been introduced. A plant or small clump in a five or six inch pot will continue to bloom, under fair treatment, for at least ten months of the year. This Primrose is absolutely free from insect pests and disease, it prefers a moderate temperature and some sun, but, will bear as low a temperature as the ordinary geranium without injury, the roots must be kept moist without wetting the leaves.

After commencing to flower it will continue to throw up stem after stem, each bearing a dozen flowers, delicately shaded from white to lavender, standing shear above the foliage. The flowers are useful alike for personal decoration, or as a table plant.

The plants are easily grown from seed or can be purchased at a small cost. In June the clumps can be divided, repotted and kept in some shady corner and occasionally watered till wanted in Autumn. The leaves are said to irritate the skins of some persons, but I have never experienced any bad effects although subject to plant poisoning. The above cut is taken from "Book of Canadian Plants," Webster Bros., Hamilton.

FIG. 652.—PRIMULA OBCONICA.

Gravenhurst, Muskoka. J. P. COCKBURN.

The Black Barbarossa.

(*See Question No. 624.*)

Hon. G. W. Campbell, of Ohio, the celebrated grape grower of the State, writes: I think Black Barbarossa was introduced into England some fifty years ago, and was said to be as large as Black Hamburgh; but it does not seem to have attained popularity, and I see no mention of it for a long time. I see it mentioned in a French work, as a rare beauty, but inferior to the Chasselas. I do not think it would have any value for out of door culture above the Hamburg.

ANNUAL MEETING OF THE ONTARIO BEE-KEEPERS' ASSOCIATION.

THE annual meeting of the above Association took place at Lindsay, Ont., January 9th, 10th and 11th, 1894. The Bee-Keepers' Association consists of about 200 members, and last year of thirteen affiliated societies. The Association receives a grant of $500 per annum. The membership fee is $1 per annum. The funds are expended in salary of secretary and treasurer, expenses of directors and other officers, a grant for prizes to the Toronto Industrial Exhibition and the Western Fair, London; grants to thirteen affiliated societies, $200. Then, during the year of 1893, each member received a copy of "The Canadian Bee Journal." The same holds good for 1894. Each member, as with The Fruit Growers' Association, is thus practically receiving a full return for his membership fee in this one item alone.

The balance of the funds are expended in necessary business expenses and expenditure in special direction as occasion may call for.

Reference has been made to affiliated societies, and a brief explanation in this connection will not be out of place. A County or District may organize an affiliated society of the Ontario by complying with the following regulation :— Each affiliated society must pay a fee of $5.00 to the Ontario, and five of their members must also be members of the Ontario Bee-keepers' Association. In return, an affiliated society gets an annual money grant of a sum fixed by the Board of Directors of the Ontario Bee-keepers' Association. They also have the privilege of sending two delegates to the Ontario's annual meeting, who have the right to take part in all business as if they were paid members. The money granted to the affiliated society must be expended in certain directions considered to be the most useful plan, and this plan is indicated by the Ontario Bee-keepers' Association. This plan tends to give a local interest throughout the Province in the Ontario Bee-keepers' Association. For such a far-reaching work the Association finds it has hardly sufficient funds, and S. T. Pettit, Belmont, made a wise suggestion when he stated the work of the Asssociation deserved greater support at the hands of the government.

The past annual meeting brought out some very valuable information. It is to be regretted that, like all other educative societies, those requiring information the most are those not present. The discussion on marketing honey came up, and one member suggested that, at the present price of honey, it was a food that could be purchased by the most economic; it had great nutritive qualities, and in many ways it was valuable. Bee-keepers were making a mistake in reducing the retail price ; it would pay them better to allow a fair margin

for the cost of retailing, and in that way offer some inducement to those who came into greater contact with the consumer.

RIPENING HONEY.

It was pointed out that many bee-keepers were keeping bees and did not secure the best results from them because they did not give the bees sufficient room in the surplus compartment. When only one-half story was given the hive, the bees whilst finishing those sections had to go idle, whilst if two half stories were placed on the hive, the bees could be finishing the top tier whilst storing the fresh honey in the lower. In this way there would be no loss of honey through the bees being idle, and there would be less tendency to swarm.

With extracted honey the same. When only one upper story is used, the bees have to remain idle whilst ripening the honey, or the bee-keeper has to extract before the honey is in a proper condition. By using two upper stories the same plan would work as in the comb honey. It was agreed by one or two that the honey could be ripened after leaving the hive, but it was a difficult matter to prove that any benefit would be derived from such a plan. It was admitted the bees would gather no more honey, and it appears only reasonable that, if plenty of room is given, the bees can themselves do this at the least expense. With this added room the bees are kept in a more contented condition and will be less liable to swarm, a very important matter in securing the best results.

CANADIAN HONEY.

The triumphs of Canadian honey could, at such a convention, of course not be passed by in silence. Not only did Canadian comb honey score the highest at Chicago, but a Canadian firm (Goold, Shapley & Muir Co., Ltd.) took more awards in the aparian department than any other firm. Some of the firms with which they entered into competition claim, and doubtless justly, to do one half a million dollars' worth of business, in bee-keepers' supplies and honey, per annum. That Canadian bee-keeping is only in its infancy there is no doubt. In Canada about 200,000 colonies of bees are kept, whilst some European countries keep 1,600,000 colonies, and quite a number keep over 500,000.

R. F. HOLTERMANN.

Brantford, Ont.

IMPORTANCE OF PHOSPHATES. — The phosphates, like the nitrates, are found everywhere in the soil and are of great value in their relations to plants. The phosphates found in the bones are taken into the animal body in the food. All plants used as food contain small quantities of phosphorus compounds which they get from the soil. The phosphates taken into the body are partly given off in the excrement and urine.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE GRAPE GROWERS of Canada have important interests at stake. The French Treaty proposes the removal of the present 30% ad valorem duty on French wines; and, since many of these wines are artificially produced at nominal cost, and the freight rates from France to Montreal are so very low, the result will be to flood our country with spurious and doctored wines, in competition with our pure native grape wine. Now when we consider that Ontario has an area suitable for grape culture equal to the present area of the vineyards of France, and that already about four thousand people are interested in grape growing in our province, it is evident that it is of the utmost importance that this section of the French Treaty, at least, be not ratified.

APPLES FOR AUSTRALIA.—We have received a letter from the Hon. McKenzie Bowell, in which he calls the attention of the Fruit Growers of Ontario, to the possibility of opening up a profitable export trade in apples with Australia, during the months of October, November and December, the season when they have no native apples. At present apples are shipped to Sydney, N. S. W. from California, during these months, the principal varieties being Winesap, White Winter Pearmain, and American Pippin. The market value is from 10/ to 12/ per box, presumably bushel boxes. The duty is 1/ per bushel. To carry well the apples should be wrapped in paper, and as neatly packed as oranges.

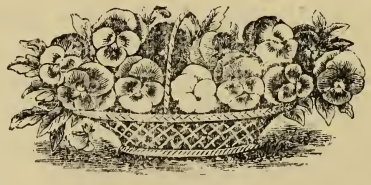
In order to know what opening there really is for us, we have written a correspondent in Sydney for further particulars, and also to the head office of the C. P. R. for through rates per 100 lbs. from Toronto to Sydney.

A MEETING of the Brant Fruit Growers' Association was held in Burford on the afternoon of the 22nd of February, and some interesting papers were

discussed. Mr. Lee, Secretary of the Association, gave the following list of rules which formed an agreement between himself and his pickers of small fruits: Mr. ..... will pay 1c. a box for strawberries, 1¼c. for blackberries, and 1½c. for raspberries to all who comply with the following rules: 1. Pickers must pick the season through, health permitting. 2. Pickers must come at the time appointed and remain until dismissed. 3. No green or soft berries are to be placed in the boxes. 4. Pickers will not cross from one row to another. 5. Throwing of berries, boxes or anything else will not be allowed while picking. 6. Berries must not be left exposed to the sun after being picked. 7. Pickers will make sure that the number of boxes are entered on the books when delivered at the packing house. 8. Pickers may receive a part of the money at any time, upon giving notice the day before it is wanted. 9. Pickers will not use profane or vulgar language. 10. Pickers will be allowed fruit at wholesale prices.

FREIGHT ON APPLES TO AUSTRALIA.—We are in receipt of a courteous letter from Mr. Geo. Olds, General Traffic Manager of the C. P. R., in which he writes as follows:—"All Traffic, at present handled by this Company in connection with the new Australia S. S. Line, has been handled on an experimental basis as to through rates. We shall be glad to give all Canadian commodities a fair trial in the Australian markets before getting our rates up to a point which will give us some profit. We would be willing to carry apples in barrels and half barrels from Toronto, Hamilton and Grimsby to Sydney, N. S. W., at $1.50 per 100 lbs., and, as the Australian market for our apples has not yet been tried, I will assure you this rate on any experimental shipments in carloads, that you may arrange to make from the next crop.

At present, the steamers leave Vancouver on the 16th of each month, and the time between ports is from twenty to twenty-one days. To reach Vancouver from the Ontario points above mentioned, we should require less than sixteen days from Toronto; and to be quite safe, it may be better to allow two or three days extra. We have already landed goods from Toronto at Sydney in thirty-four days.



Question Drawer.

625. Sir,—The Western Fair gives a prize for the Oswego Beauty pear. Is it the same as Oswego Beurre of "Downing"?

G. H. Nixon, *Hyde Park.*

So far as we know, there is no pear called Oswego Beauty. No doubt the Oswego Beurre is the pear intended by the prize list.

Wild Goose Plum.

626. Sir,—Are the Wild Goose plum and the Japan plum the same? Sixteen years ago I planted five trees of the Wild Goose, they blossomed every year, but never bore a pint of plums, and last year I cut them down. If the Japan plums are different, would you advise my planting any of them in this country?

G. H. Nixon, *Hyde Park.*

The fruit of the Japan plums is very much superior to that of the Wild Goose. The latter is a native American, and not worthy of cultivation where the finer varieties of English plums can be grown. The Botan and Abundance are two varieties of Japan plums which are highly recommended for extensive trial in southern Ontario.

Irrigation.

627. Sir,—Would it be profitable to irrigate for small fruits; plenty of water being available by raising it a distance of twenty feet from the bottom of a stream to the level of the field. What would be the best means of raising and distributing it, and the cost for ten acres, the land being sandy, nearly level.

G. H. Buckrell, *Springford. Ont.*

In the older countries, as India, Germany, Italy and Spain, irrigation has long been practiced, and so advantages is the practice that it is being more and more adopted. The same would no doubt be true in Canada, could we work it without too great expense. The usefulness of irrigation needs no proving, for not merely moisture, but fertility also comes thereby. In our correspondent's case the water could no doubt be pumped by a windmill, a steam pump, or a hydraulic ram. A reservoir might also be necessary, which would add to the expense, but if a pond of puddled clay could be constructed at the highest point in the ten acre field, the undertaking would be simplified. The water might be distributed by shallow furrows, so arranged as to give the ground a good soaking. A writer in the Indiana Farmer says:—A stream of water one inch in diameter, flowing at the rate of four miles an hour, will cover one acre of land one inch deep in about 30 hours.

The cost of irrigation of course depends mainly upon the ease with which the supply of water can be obtained. It has frequently been shown that where wells can be had of sufficient capacity the profits of irrigation are large in com-

parison with the cost. Where the fruit garden is located in close proximity to a lake, springs or running stream, the cost would be comparatively slight and the profits correspondingly increased.

Garden Cart.

628. SIR.—Can anyone tell me if a cart could be made with the shafts on one side like the shafts on a cutter, so that a horse could walk between rows of currants, raspberries, etc., in order to manure them, the wheels one each side of row?

GARDENER, *St. Thomas.*

Sawdust and Shavings.

629. SIR,—Would sawdust, or shavings from a planing or shingle mill be of any value as a mulch for berry bushes and grape vines?

G. H. BUCKRELL, *Springford, Ont.*

They would be useful on heavy soils, first as a mulch and afterwards to work into the soil and render it looser of texture.

Standard Weights.

630. SIR,—Is there a standard weight for raspberries and strawberries in Canada?

D. M. L., *Paris.*

In Iowa the standard weight for these fruits is 32 lbs. to the bushel. We do not know of one adopted in Canada.

Sulphate of Copper and Lime.

631. SIR,—Why do we mix sulphate of copper and lime for spraying? Does not the lime used kill the sulphate? Then why not use a weak solution of sulphate without the lime?

GARDENER, *St, Thomas.*

Reply by Prof. Shutt, of Ottawa.

Lime is added to the solution of copper sulphate (in the making of Bordeaux mixture) in order to precipitate the copper in an insoluble form, viz, the hydrate. Sulphate of copper, *even in dilute solutions*, is injurious to foliage, and if applied of such a weak strength as to be non-injurious, its efficacy as a fungicide would have disappeared. The hydrate of copper, which in the Bordeaux mixture remains in suspension and insoluble, has been found to be the active fungicidal principle of the Bordeaux mixture, and at the same time it is without any injurious effect upon the leaves. Besides precipitating the copper salt, lime also acts beneficially, in causing a greater adhesion of the copper hydrate to the oliage, thus lengthening the period of the efficacy of the spray.

Worms in Soil of Window Plants.

632. SIR,—Some of my window plants show signs of worms in the soil. I am told to use lime-water—"*not too strong.*" How much lime per gallon of water can I use with safety? and is there anything else more effectual?

MRS. F. J. H., *Ottawa.*

Reply by Messrs. Webster Bros., Hamilton.

Water will only hold a certain amount of lime in solution and it is not injurious to the roots of the plants; nothing is so effective. Quicklime must be used, air-slaked lime that has gone to powder is of little or no value. The lime-water must be used at once, the sooner the better after it has settled; if exposed to the air and light, or even to the light alone, it loses very much of its value. Make sure that the earth is saturated and there will be no living worms left.

Ashes and Bone Dust for Grape Vines.

633. SIR,—What is the best manner to apply ashes and bone meal to grape vines, and what amount to each vine on sandy soils?

Reply by Prof. Hutt, Horticulturist, O. A. C., Guelph.

They may be applied separately, or, better, mixed in equal proportions. In either case spread evenly over the ground as far as the roots extend, which in the case of full-grown vines will be from one row to another. The amount to apply will depend some upon the size of the vine. To a full-grown vine, a good large shovel-ful, or nearly a peck, will be none too much.

Swamp Muck for Grapes and Berries.

634. SIR,—Would it pay to draw swamp muck half a mile to apply to grapes and berries?

G. H. BUCKRELL, *Springford, Ont.*

Reply by Prof. Shutt, Central Experimental Farm, Ottawa.

Although good, air-dried, muck contains about 35 lbs. of the valuable element, nitrogen, to the ton, I do not think it would pay to apply the *crude, untreated* muck to a vineyard—unless the soil were very light, and the tilth and retentivity would be improved thereby. Composted, however, with wood ashes, lime, or barnyard manure, a very valuable nitrogenous fertilizer would result, which would yield a large amount of plant-food to the growing vines. In a compost made with wood-ashes, there is also a large quantity of potash—an essential and important element to the growth of vines.

To Clear Rose Foliage of Worms.

635. SIR,—I have two climbing roses, "Gem of the Prairie" and "Baltimore Belle." Last year they were infested with the tiny green slug or caterpillar. I used whale-oil soap, in water, with very little benefit; then strong tobacco-water, with but little better results, only succeeding in keeping my favorites alive, though other roses were clean and healthy. Can you help me from your wisdom store? I think an insect powder would be more easily applied, if you will say what would be best to use.

MRS. F. J. HEATH, *Ottawa.*

Reply by Messrs Webster Bros., Hamilton, Ont.

Dust the foliage with fine sifted coal ashes or road dust; it gives the bushes an ugly appearance for a time, but will prove effectual and need only remain on a few days.

Area of Orchard.

636. SIR,—What is the amount of land in Ontario devoted to the orchard?

A. GREY, *Port Nelson.*

About 200,000 acres.

Word Pippin.

637. SIR,—What is the distinctive meaning of the word "pippin"?

A. GREY.

Pippin, or pip, is an old English word for seed, and a pippin-apple is one raised from the seed originally.

Pears for the North.

638. SIR,—How far north in Ontario will pears succeed? and what varieties would do best in this region?

C. A. JONES, *Murchison, Ont.*
(Nipissing district, north of Belleville.)

Some varieties, as the Bartlett, is too tender to be grown very far north of Toronto; but others, as the Flemish Beauty, are more hardy. Try Clapp's Favorite, Flemish Beauty, Ostrand's Summer, Oswego Buerre, and Seckel.

Grafting the Grape.

639. SIR,—What is the best method of grafting grape vines? When should scions be cut and grafting done? Can wild vines be successfully grafted?

WM. B. LEAVENS, *Chisholm, Ont.*

Open Letters.

Spraying Trees.

Sir,—I notice that Mr. A. W. Graham had poor success in spraying his trees. My experience differs from his. I began spraying my plum trees just after the blossoms began to fall, and sprayed them three weeks, once each week, with Paris Green My sprayer was a brass syringe, which did very good work. The result was, that I got forty baskets of large plums from twelve trees; General Hand and Bradshaw sold for $1.00 per basket, and the Reine Claude and Lombard for 75 cents. They took two first prizes at East York township fair, and two at Markham fair. In a previous season when I did not spray I had a very poor crop of plums, and my neighbor who did not spray last year, as a result has to pick his plums before they were ripe, because they rotted so badly and dropped of.

Thos. Gardiner, *Eglinton, York Co.*

Zanzibar Water Lilies.

Sir,—We derived great pleasure from our water lilies last year. Our tank is six feet across and eight inches deep, and in this we place six inches of rich soil—an old hotbed bottom would furnish the right thing. In the tank we put six plants in the first week in June, and in about two weeks the first flowers were open, and the plants continued blooming until the first frost in winter. There were from six to ten flowers open every day; the flowers opened in the morning and closed in the evening. We had one plant in a wooden pail and it bloomed, but the flower was small; one of those in the tank measured eight inches across, while that in the pail was only three inches. In some respects the flower is not equal to our Nymphaea odorata, but the easy manner of growing them places them a long way ahead of our natives. You have only to put the seed in a bowl or open dish in which is placed a couple of inches of soil, and keep it covered with water at a temperature of 70° or 80°, and in about two weeks they will have started to grow. At first the growth is slow and the leaves were only about two inches across when I planted ours out in June.

E. W. Bowslaugh, *Kingsville, Ont.*

Judging Onions.

Sir,—For over thirty years I have exhibited onions at our township show, both from seed and the English Potato onion. Now I claim that if the prize list calls for (as ours does) 6 onions, red, white and yellow from seed, then 6 onions, "English Potato," that the intention of the directors is that the exhibit shall consist of six perfectly grown single onions. Some few years ago a party sent six bunches, but as there were five entries of single onions he got no prize. If bunches are to be shown, then I claim that the prize list should call for one peck of English Potato onions for planting; in that case I should pick out the best developed bunches, containing each at least eight small onions of good shape, as there is a great difference between a good sample and a poor one. Then I claim that a well grown single Potato onion can be known from any yellow onion from seed, particularly the Danvers, which is a pale yellow, for there are two very distinct peculiarities in a Potato onion when ripe and matured; first, you will find the yellow marking on the outside leaves to be darker, having a tinge of color different from other yellow onions; second, the first few outside leaves are always dry and feel like paper, and when ripe are always detached from the neck.

Chas. Jas. Fox, *Delaware.*

Novelties.

Under this head we simply record the names of some of the recent introductions, together with points of merit claimed for them by the introducers, without any endorsement whatever of their claims.

THE TIMBRELL STRAWBERRY, and the ELDORADO BLACKBERRY are two fruits which are being widely advertised by Mr. E. W. Reid, of Bridgeport, Ohio; and which he is putting on the market for the spring of 1894.

The Timbrell is described thus: bloom late, imperfect; plant healthy, vigorous in growth, very hardy and productive: berry large, good quality, and a good shipper.

FIG. 653.—THE TIMBRELL.

FIG. 654.

The Eldorado blackberry is an accidental seedling named after the town near which it was found. It has been cultivated for twelve years, and has been in the hands of the Experiment Stations for five years. Plants vigorous and hardy, productive; berries sweet, coreless and of extra fine quality. Mr. Reid says he has paid $2,000 for the control of this berry.

PEARL SEEDLING.—A seedling of Houghton crossed with Ashton by Prof. Wm. Saunders. Plant upright, compact, vigorous, wonderfully productive. Fruit resembling Downing, but larger, roundish oval, whitish green, with the rib veins distinct; skin smooth; flesh soft, juicy and very good in quality.

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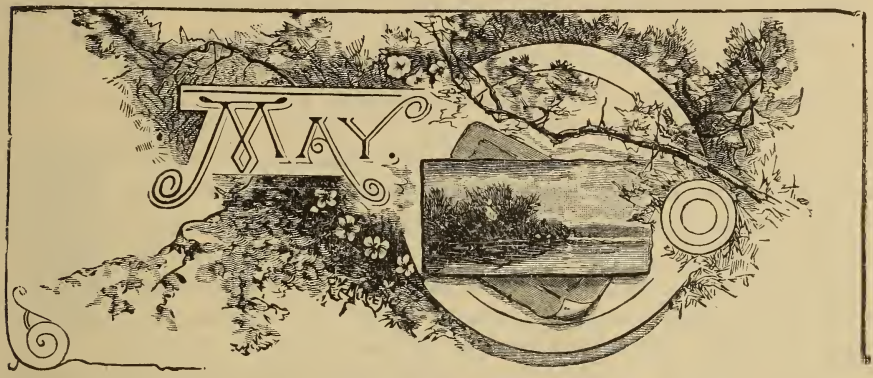


THE BEN DAVIS.

PERHAPS there is no apple about which more difference of opinion exists than the Ben Davis. Like the Kieffer pear, the Crescent strawberry, the Lombard plum, and the Concord grape, we might say of the Ben Davis that, while far from being the first of its class in quality, it stands at the head for productiveness and consequent profit. The early orchardists in Ontario planted their commercial orchards with the Baldwin, but now find that in many localities instead of being the most productive, it is the least so; orchardists in the Western States, on the other hand, have planted the Ben Davis in their commercial orchards, and in fruitfulness at least it has not disappointed them.

In Southern Ontario many of the best orchards of Baldwin have been almost barren for the last half decade of years, and it is for this reason we bring under the notice of the owners an apple which is not a failure in this respect at least. The late P. C. Dempsey, who was our director for Prince Edward Co., had great confidence in the Ben Davis, and in our report for 1893, page 7, he says, "I can make more money out of one tree of the Ben Davis than I can off fifty Kings. We have a lot of trees of the latter variety twelve years planted, and have never realized twelve barrels off them, but we have taken that many off a single tree of the Ben Davis. For market value, we find that in England the Ben Davis has sold as high as 32/ a barrel."

At our meeeting in Peterboro' last December, Mr. Alex. McNeill championed the Ben Davis. He said, "The Ben Davis is like a piece of cork in the

fall or winter, but in the months of January, February and March, a well grown Ben Davis is just as nice an apple as I want to eat, and I am very particular in my choice of an apple, too. As for profit, I believe there is no apple grown that will give you as much." Mr. Stenson, of Peterboro', said, "I planted seventeen trees of the Ben Davis sixteen years ago. They began bearing in six years, and have been bearing ever since. This last year I took eighty-six bushels off those trees—eighty of them good salable apples. I would sooner grow the Ben Davis at 50 cents a bushel than any other apple at $1.00." Mr. Stenson's method of handling them is to store them until the 20th of May, when he ships them to England, and gets the top price in the market.

On the other hand, it is urged by some apple growers, whose experience is equally reliable, that when planting an orchard we should choose varieties of better quality than the Ben Davis, because the time will come when quality must rule in the markets. At our meeting in Windsor, Mr. Elliot spoke as follows concerning this apple, "No doubt the Ben Davis sells well, but I think a man who charges his neighbor $2.00 for a barrel of Ben Davis robs him of $1.75. It may do very well for hotel keepers, for one barrel of them will last a first class hotel as a dessert apple about three months, whereas a really good apple will not last a week. If you send a boy into the cellar for an eating apple, he never brings a Ben Davis, and if your wife wants to please you with an apple dumpling, she does not choose the Ben Davis."

Mr. A. McD. Allan said at the same meeting, "Although good prices are now paid in England for the Ben Davis, it is bound to come down in value before very long. The fact is they are looking into the quality of apples in those markets more closely than the consumers in our own markets."

The estimation in which this apple was held by our fruit committee is shown by the rating they gave it, viz., dessert 0, cooking 1, home market 8, foreign market 9;—only 18 points out of a maximum of 40.

At Chicago the Ben Davis was one of the finest looking apples shown by Idaho, Oregon and British Columbia. As grown in those quarters, the apple is twice the size of those grown in Ontario, and more highly colored; while the Spy, one of our best quality apples, is a miserable failure. No wonder that the Ben Davis is the great apple of the west.

Our colored plate shows a large sample of the Ben Davis, too large to be grown in Ontario, but scarcely as large as those shown at the World's Fair by British Columbia. We cannot better describe this variety than by quoting from A. J. Downing's great work. He says, "The origin of this apple is unknown. J S. Downer, of Kentucky, writes that old trees are there found from which suckers are taken in way of propagating. The tree is very hardy, a free grower, with very dark reddish brown, slightly grayish young wood, forming an erect round head, bearing early and abundantly. In quality it is not first rate, but from its early productiveness, habit of blooming late in spring after late frosts, good size, fair even fruit, keeping and carrying well, it is very popular in all the south-west and west.

Fruit medium to large. Form roundish, truncated conical, often sides unequal. Color yellowish, almost overspread, splashed and striped with two shades of red, and dotted sparsely with areole dots. Stalk medium, rather slender. Cavity narrow, deep russeted. Calyx partially open. Basin wide, abrupt, slightly corrugated. Flesh white, tender, moderately juicy, pleasant subacid. Core medium to large. Good to very good. December to March.

EVAPORATORS.

REFERRING to evaporators and evaporating fruit, a subject which has received some attention in the HORTICULTURIST, I am of the opinion that it will pay every farmer who has an orchard to own an evaporator of his own, not that he will make lots of money out of it, but because it is one of the things necessary to make an orchard more profitable. To illustrate:—two years ago a strong wind blew down a large quantity of my fruit early in the fall. I could not sell it for anything and I decided to evaporate it, and did so. In season I sold my unevaporated fruit and also my evaporated wind-falls, and the latter netted me more per bushel than my best unevaporated fruit. The evaporator I used had a capacity of seven to nine bushels per day. I believe many poor evaporators have been sold. I bought one several years ago, which disgusted me, and in this connection I beg to say that a fruit grower here, who has used different kinds of evaporators, has invented a good evaporator, suitable for farmers and fruit growers, which is simple and cheap. Some of its good points are economy in fuel, quick evaporation and first quality of product, no waste of heat by inserting, removing, and adjusting trays. If you want nearly an even heat over all the trays you can have it. If you want a stronger heat on part of the trays than others you can have it, or if you want nearly all the heat on the one tray, or on any number of trays, you can have it, all of which is important in practical work, and a separate bleacher is not required. This evaporator, as applied to cook stoves too, will really be a valuable and economical machine for many farmers. It utilizes the heat in the stove in its own way, and will evaporate several baskets of fruit per day, or as much as some evaporators with heaters attached. Sits on the back part of the stove, out of the way, leaving the front half free for other use. The escapement flue will fit a stove pipe and may easily be connected with cook stove pipe, thereby avoiding objections to bleaching the fruit in the house.

It is proposed to manufacture these evaporators as cheaply as possible, cheaper than others of same capacity, and as soon as satisfactory arrangements are completed and patents secured. Any wanting them for next fall's use will need to give their order some length of time before wanted.

Stevensville, Ont. P. H. HENDERSHOT.

PARIS GREEN WITH THE BORDEAUX MIXTURE AND AMMONIACAL COPPER CARBONATE.

THE efficacy of certain spraying fluids for combating injurious insects and fungus diseases of plants is now well established and recognized. Of the insecticides, Paris Green in water is perhaps the most important; of the fungicides, the Bordeaux mixture and the Ammoniacal Copper Carbonate are the most widely known and used.

At times, more especially in orchard work, both an insecticide and a fungicide are required. Consequently, there have been efforts made for several years past to prepare a fluid which would combine these functions. The application of such a fluid, if efficaceous, would result in a considerable saving of time and labor. The simplest method, and one that at once occurs to those using spraying fluids, is to add the Paris Green, in the proper proportion to the fungicide. Such fluids or mixtures using Bordeaux and Ammoniacal Copper Carbonate, have been tried for several seasons, and, as might have been expected, various results have been reported. In some instances, failure to protect from the ravages of insects and fungous foes is said to have attended these trials, and further that the failure is to be attributed to a solution or decomposition of the Paris Green in the fungicide fluid. To ascertain if such a decomposition or solution actually occurred, the following experiments were made:

1. Diluted Bordeaux mixture with Paris Green was prepared from the formula

Copper Sulphate	4 lbs.
Lime	4 lbs.
Paris Green	4 oz.
Water	50 gallons.

The freshly burnt lime was slaked and stirred with water until the whole was of the consistency of cream. This was then stirred into a vessel containing the dissolved Copper Sulphate and made up to the required volume. The Paris Green was then added and the mixture thoroughly stirred.

(*a*) After keeping the mixture thoroughly agitated for two days, a portion was withdrawn and filtered. The clear filtrate was then submitted to careful chemical analysis, but not a trace of arsenic could be detected.

(*b*) For a further period of a week, the mixture was kept agitated and then another portion withdrawn and filled. Analysis did not reveal the presence of arsenic in the filtrate.

We are therefore justified in concluding that under the conditions here stated no decomposition or solution of the Paris Green takes place in the Bordeaux mixture, and therefore that the efficacy of this arsenical poison, as an insecticide, is not thereby lessened.

2. Ammoniacal Copper Carbonate was prepared according to the following formula :

Copper Carbonate	5 oz.
Ammonia	2 qts.
Paris Green	4 oz.
Water	50 gallons.

The Paris Green was stirred in after the dilution to the full amount, viz., 50 gallons. This precaution was taken, as *strong* ammonia dissolves Paris Green readily. It was noticed that the Paris Green very quickly subsided in fluid, when the latter was allowed to remain at rest.

(*a*) The fluid with the suspended Paris Green was thoroughly shaken for two days and a portion withdrawn and filtered. On analysis it was shown to contain *traces* of arsenic.

(*b*) For seven days more the mixture was continually agitated. A portion was then filtered and analysed, the result showing that *heavy traces* of arsenic were in solution. It was clearly proved, however, that no appreciable quantity of the Paris Green had been dissolved.

Consequently, as in the case of the Bordeaux mixture, Paris Green may be added to the Ammoniacal Copper Carbonate without its insecticide qualities being injured or materially lessened.

It may be pointed out that successful spraying depends upon many factors, only one of which is the quality or composition of the fluid. Carefulness, thoroughness, the *time* and frequency of application, and the character of the season, have all a marked effect upon the result.

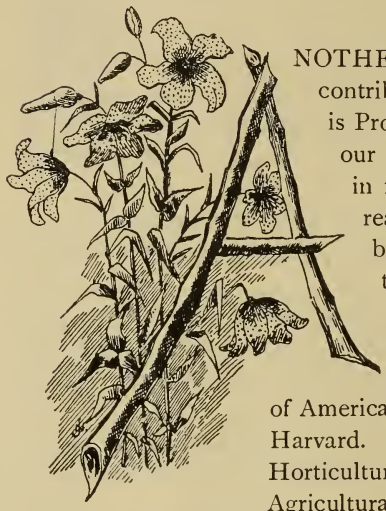
FRANK T. SHUTT, M. A.

Chief Chemist Dominion Exp. Farm.

Exposure for a Rose Bed.—A friend inquires what is the best exposure for a rose bed. We would say that any exposure is good enough, the main point being to have the soil in proper condition, which is that it shall have drainage and be well enriched. On a level surface especially must the drainage be well attended to, but this is scarcely less necessary on hillsides even of considerable declivity, if the soil is heavy. A slope to the east or to the north, we think, most desirable for roses, for the reason that the blooms will last longer and there is less danger from severe freezing in winter. A southern exposure might give a little earlier bloom, but it would be of shorter duration, and the danger of injury in winter is greater, and the same is true of a western exposure. But if the circumstances should decide any one of these exposures it should not exclude the pleasure of a rose bed. Experience might vary with the different exposures, and varieties which might succeed with one might not be so well adapted to another ; but this is true in regard to all locations. The rose is so beautiful and desirable, and with moderate attention will bloom so generally that it should be universally planted, and that not sparingly.—Vick's Magazine.

WESTERN NEW YORK FRUIT GROWERS—III.

Pear Scab—Grape Rot—Bordeaux Mixture, etc.



NOTHER prominent gentleman, whose presence contributes greatly to the meetings of this Society, is Prof. L. H. Bailey, whose portrait we here give our readers. Born at South Haven, Michigan, in 1858, in the fruit centre of that State, he was reared on a fruit farm, and thus early in life became thoroughly acquainted with the practical side of fruit growing. In 1882 he graduated from Michigan Agricultural College, after which he was fortunate enough to be associated for two years with the greatest of American botanists, the late Professor Asa Gray of Harvard. Then for four years he was Professor of Horticulture and Landscape Gardening at the Michigan Agricultural College.

After a visit to Europe, he was appointed in 1889 to the position he still holds at Ithaca as Professor of General and Experimental Horticulture at Cornell University. His bulletins are the most attractively printed of any that come to our table, and have a direct, practical bearing upon the work of the fruit grower. His reputation is rapidly growing, because of his frequent valuable publications, such as "Annals of Horticulture," "Horticulturist's Rule Book," "The Nursery Book," "Cross Breeding and Hybridizing," "American Grape Training," "Field Notes on Apple Culture," "Talks Afield,' etc. We hope for the pleasure of his presence at some of the meetings of our own Association in the near future.

Prof. Beach, of the Geneva Experiment Station, gave the result of his experience during the past season in spraying for pear scab, and, as they are quite opportune, we will give some account of his statements.

The Bordeaux mixture was the most satisfactory liquid used; its cost was only about one-half cent a gallon, and the pecuniary profits from its use were very evident when it was faithfully applied. From careful computation he estimated that a profit of $50 accrued from its repeated application to one hundred pear trees, thirty-five years planted. Fruit from some Seckel trees, for instance, that were faithfully sprayed, sold for $6 per barrel, while that from trees unsprayed averaged only 90 cents a barrel. Not only was the fruit itself comparatively free of scab or deformity, but it also hung better on the trees during wind storms, while the trees themselves were more vigorous and the

foliage more healthy than that of the trees unsprayed. This success, however, can only be attained by early and faithful application, for the action of the poison is largely preventive by destroying the life germs as they germinate, and by coating over the fruit and foliage so that they become impenetrable by spores of diseases. He also found an increasing benefit year by year from spraying,

FIG. 655.—PROF. L. H. BAILEY.

because the disease germs seem to grow gradually less in number. The recipe for making Bordeaux mixture, given by Prof. Beach as the latest, was as follows :

Dissolve four pounds of copper sulphate in water, nearly filling a forty-five gallon cask. Next make a whitewash or cream of freshly slaked lime. Have on hand a small bottle containing a saturated solution of yellow prussiate of potash (ferro-cyanide of potassium) in water. As you add the lime to the copper sul-

phate water, apply the test from time to time by adding a drop from the small bottle. As long as you notice a change of color in the mixture, more lime must be added. When further addition of the drug ceases to change the color, the mixture contains lime enough. The necessity of straining can be avoided by using only the clear milk of lime, not the settlings. Freshly slaked lime is always to be preferred. It sticks better, and it does not take so much lime. Its object is simply to neutralize the acid in the sulphate. The mixture must be constantly stirred while being applied. For close work, there is no better spraying nozzle than the Vermorel. A bamboo extension may be used with which to get the nozzle into the tree. A weak mixture put on thoroughly is better than a strong mixture applied in a hap-hazard way.

For very high trees he commended the MacGowan nozzle, made at Ithaca, N.Y. A stop cock in the hose near the ground would be found a most important provision. Some people complain of the difficulty of dissolving the copper sulphate; this could be overcome by using boiling water.

He begins spraying with the Bordeaux mixture when the buds first swell, and at this time a smaller amount of the mixture per tree is required, because there is no foliage to cover. In his thirty-five-year-old orchard he used about three gallons per tree for the first application, but later on it was necessary to use more than double the quantity.

For black rot and mildew of the grape, Prof. Waite, of Washington, stated that five or six applications of the Bordeaux mixture seem necessary to secure certain results, but he had demonstrated that black rot was absolutely controllable. Of ten bunches of Concord grapes sprayed, 95% were perfect, but of ten under the same conditions left unsprayed, 95% were worthless. He makes the first application when the young shoots are six or eight inches long; an earlier application is useless.

Anthracnose he found harder to deal with, but still largely preventable if application is made every ten or fifteen days during the growing season.

For gooseberry mildew, potassium sulphide was found to be more serviceable than was the Bordeaux mixture.

Mr. S. D. Willard gave the following list of plums as, in his experience, the best six market varieties: 1, Bavay, Green Gage or Reine Claude; 2, Hudson River Purple Egg; 3, French Damson; 4, Fellemberg; 5, Grand Duke; 6, Monarch. In extending the list to twelve, he would add: Field, Bradshaw, Gueii, Golden Drop, German Prune and Peter's Golden Egg.

Relation of Phosphates to Fertilizers.—The fact that phosphorous compounds are absolutely necessary for the maturity of plants indicates that phosphates are essential to complete fertilizers. Soils become deficient in phosphates more quickly, in general, than in other fertilizing ingredients, and, therefore, when the use of fertilizers is needed at all, phosphates are generally required, whether with or without other fertilizing elements.

SPRAY CALENDAR.

For aphides or plant lice use kerosene emulsion on all plants.

PLANT.	FIRST APPLICATION.	SECOND APPLICATION.	THIRD APPLICATION.	FOURTH APPLICATION.
APPLE (*Scab, codlin moth, bud moth.*)	When buds are swelling, copper sulphate solution.	Just before blossoms open, Bordeaux. For bud moth, Arsenites when leaf buds open.	When blossoms have fallen, Bordeaux and Arsenites.	8–12 days later, Bordeaux and Arsenites.
CABBAGE (*Worms, aphis.*)	When worms or aphis are first seen, Kerosene emulsion.	7–10 days later, if not heading, renew emulsion.	7–10 days later, if heading, hot water, 130° F.	Repeat third in 10–14 days if necessary.
CHERRY (*Rot, aphis, slug.*)	As buds are breaking, Bordeaux; when aphis appears, Kerosene emulsion.	When fruit has set, Bordeaux. If slugs appear, dust leaves with air-slaked lime. Hellebore.	10–14 days, if rot appears, Bordeaux.	10–14 days later, Ammoniacal copper carbonate.
CURRANT (*Mildew, worms*)	At first sign of worms, Arsenites.	10 days later, hellebore. If leaves mildew, Bordeaux.	If worms persist, Hellebore.	
GOOSEBERRY (*Mildew.*)	When leaves expand, Bordeaux.	10–14 days later, Bordeaux.	10–14 days later, Ammoniacal copper carbonate.	10–14 days later, repeat third.
GRAPE (*Fungous diseases*)	In Spring when buds swell, copper sulphate solution.	When leaves are 1–1½ inches in diameter, Bordeaux.	When flowers are open, Bordeaux.	10–14 days later, Bordeaux.
PEACH, NECTARINE (*Rot, mildew.*)	Before buds swell, copper sulphate solution.	Before flowers open, Bordeaux.	When fruit is nearly grown, Bordeaux.	5–7 days later, Ammoniacal copper carbonate.
PEAR (*Leaf blight, scab, psylla, codlin moth.*)	As buds are swelling, copper sulphate solution.	Just before blossoms open, Bordeaux. Kerosene emulsion when leaves open, for psylla.	After blossoms have fallen, Bordeaux and Arsenites. Kerosene emulsion if necessary.	8–12 days later, repeat third.
PLUM (*Fungous diseases, curculio.*)	When buds are swelling, copper sulphate solution.	When blossoms have fallen, Bordeaux. Begin to jar trees for curculio.	10–14 days later, Bordeaux.	10–20 days later, Bordeaux.
POTATO (*Blight, beetles*)	When beetles first appear, Arsenites.	When vines are two thirds grown, Bordeaux and Arsenites	5–15 days later, Bordeaux.	
QUINCE (*Leaf and fruit spot.*)	When blossom buds appear, Bordeaux.	When fruit has set, Boxdeaux.	10–20 days later, Bordeaux.	10–20 days later, Bordeaux.
RASPBERRY, BLACKBERRY, DEWBERRY (*Anthracnose.*)	Before buds break, copper sulphate solution.	During summer, if rust appears on leaves, Bordeaux.	(Orange or red rust is treated best by destroying the plants.)	
STRAWBERRY (*Rust.*)	As first fruits are setting, Bordeaux.	As first fruits are ripening, Ammoniacal copper carbonate.	When last fruits are harvested, Bordeaux.	Repeat third if foliage rusts.
TOMATO (*Rot, blight.*)	At first appearance of blight or rot, Bordeaux.	Repeat first if diseases are not checked.	Repeat first when necessary.	

—Cornell University Bulletin.

Apples, grapes, peaches, pears and plums may need a fifth and even a sixth application, for the best success.

FORMULAS.

Bordeaux Mixture.

Copper sulphate,	6 pounds.
Quicklime,	4 "
Water,	40 gallons.

Dissolve the copper sulphate by putting it in a bag of coarse cloth and hanging this in a vessel holding at least 4 gallons, so that it is just covered by the water. Use an earthen or *wooden vessel.* Slake the lime in an equal amount of water. Then mix the two and add enough water to make 40 gallons. It is then ready for immediate use. For rots, moulds, mildews, and all fungous diseases.

Ammoniacal Copper Carbonate.

Copper carbonate,	1 ounce.
Ammonia,	enough to dissolve the copper.
Water,	9 gallons.

The copper carbonate is best dissolved in large bottles, where it will keep indefinitely, and it should be diluted with water as required. For same purpose as Bordeaux.

Copper Sulphate Solution.

Copper sulphate,	1 pound.
Water,	15 gallons.

Dissolve the copper sulphate in the water, when it is ready for use. *This should never be applied to foliage, but must be used before the buds break.* For peaches and nectarines, use 25 gallons of water. For fungous diseases.

Paris Green.

Paris green,	1 pound.
Water,	250 gallons.

If this mixture is to be used upon peach trees, 1 pound quicklime should be added. Repeated applications will injure most foliage, unless lime is added. *Paris green and Bordeaux can be applied together with perfect safety.* The action of neither is weakened, and the Paris green loses all caustic properties. For insects which chew.

London Purple.

This is used in the same proportion as Paris green, but as it is more caustic it should be applied with the lime, or with the Bordeaux mixture. Do not use it on peach or plum trees. For insects which chew.

Hellebore.

Fresh white hellebore,	1 ounce.
Water,	3 gallons.

Apply when thoroughly mixed. For insects which chew.

Kerosene Emulsion.

Hard soap,	½ pound.
Boiling water,	1 gallon.
Kerosene,	2 gallons.

Dissolve the soap in the water, add the kerosene, and churn with a pump for 5–10 minutes. Dilute 10 to 15 times before applying. For insects which suck, cabbage worms, and all insects which have soft bodies.—Bulletin of Cornell University Experiment Station.

Berry Basket Holder.—The accompanying illustration shows my device for holding two-quart boxes while picking raspberries, which has given me great satisfaction. Everyone who sees it in use praises it, and pickers take to it like a duck to water. B is a ⅜-inch iron rod drawn to a point so as to be easily inserted into the earth. It has a handle, A, and is flattened at E E, where two holes are made to screw the rod to the box. The bore should be made large enough for the boxes to be taken in and out easily. The two slats shown at D D are better to hold up the boxes than a solid bottom. The front of the box is cut away so as to facilitate handling the boxes when full of fruit. The box should be made of light, thin wood, but the back piece should be of hard wood, so that the screws will hold fast. I pay fifteen cents each to the blacksmith for the rods. The boxes cost nothing but a little time on a stormy day. These boxes keep the fruit out of the dust and dirt, and save stooping.—F. HARMER, Mich.

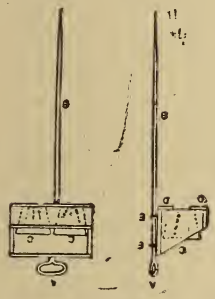


FIG. 656.

Rose Culture.—You can succed with roses as with other shrubs, giving but little time to their care, but that care must be in the line of the needs of the plant. Three "plenties" are absolutely essential to success in growing roses—plenty of sunshine, plenty of water, and plenty of manure. They will not flourish in gravelly soil, nor in its opposite, clayey soil. Good loam is the thing. If the soil be already poor, spade in barn manure about it, then cover a place as large round as a wash tub, with the manure three or four inches deep about each rose bush; a half wheelbarrow load to a bush is none too much. This mulching is better done in the fall than spring, but it will do good now. In dry seasons, the bush must be watered freely; wash water is good. Except with yellow roses, it is the new growth that blossoms, so cut your bushes back to within a foot of the ground, that will give the new growth a better chance. Rose bushes should be set where the sun can cast its rays freely upon them. Persian insect powder, used with a little blower, such as are sold at the stores, and blown over and under the leaves, will kill the white lice; white hellebore, such as is used on currant bushes, will kill the slugs (worms). Three or four applications in the season usually suffices. Your eyes and heart will be delighted with the result.—Connecticut Farmer.

THE HARDINESS OF THE CANADA RED (RED CANADA).

N a paper read by me before the Farmer's Congress, at the City of Quebec, in January, 1893, and which was afterwards published in the last June number of the HORTICULTURIST, I mentioned Canada Red as having proved to be a very hardy tree, after upwards of three years of trial at Hudson-on the-Ottawa. It is extraordinary that the fact of the hardiness of this variety does not seem to have been brought prominently before the notice of fruit growers heretofore. The test of the hardiness of Canada Red, to my mind, is conclusive. The orchard at Mount Victoria, Hudson, Ont., is situated within two miles of my own at Como, and I have had ample opportunity to observe the present condition of the trees of that orchard, and to know of the dreadfully neglectful way in which these trees have been cared for, ever since the death of the late Mr. George Matthews (some twenty years ago), who planted out the orchard. The farm was sold shortly after Mr. Matthews' death to a Montreal gentleman who never, I understand, visited the place, and the several tenants who have rented it, from year to year, of course never took the slightest trouble to cultivate the orchard properly, or even to prune the trees. The soil of that orchard is the poorest quality of sand, so poor that the present tenant has told me he sometimes fails to get even a crop of oats off it in dry seasons. Under such conditions it is surprising that any of the trees planted by Mr. Matthews, nearly thirty-five years ago, are alive at all. Some of the trees were obtained from Montreal, such as Fameuse, St. Lawrence, Pomme Grise, and Bourassa, and of these only a few survive. I distinctly remember Mr. Matthews saying that he bought a number of his trees at Rochester, N. Y. Among these, I think only Canada Red and some Talman Sweet survive. But the best trees by far, the healthiest and most productive, are the last named. The present tenant says he has frequently taken six barrels per tree, of good marketable apples, off them, and obtained some years four dollars per barrel. For many years the several tenants of Mount Victoria sold the Canada Red under the name of Red Spitz. I never took particular notice of this apple until four years ago, when I was struck by the fine, clean, healthy appearance of the fruit. Knowing that Red Spitz could not be the correct name, and at the same time being aware that many of the trees of this orchard were brought from the State of New York, I sent specimens to several pomologists, among others to Mr. L. Woolverton, of Grimsby, and all pronounced the variety Canada Red.

Fine specimens were sent from this province to the World's Fair in the fall of 1892, and placed in cold storage there, with other Quebec apples, and were exhibited until the disastrous fire in the Cold Storage building destroyed all the fruit, of 1892, in July last. No specimens of Canada Red were sent to the fair rom this province in 1893.

In this connection it is interesting to quote a letter recently received from J. C. Plumb, of Milton, Wisconsin, an authority in that state on fruit. He says: "Mr. Hoxie (who was in charge of the Wisconsin fruit), brought from the World's Fair several specimens from the Canada fruit, one labelled "Red Canada," which is our Baltimore—See Downing, pages 86 and 322. The tree Red Canada is much less hardy and vigorous, but bears double the fruit here, and in quality far better than the Baltimore. If the Baltimore bears well with you it is valuable. Its fruit is larger, cavity smaller, stem shorter, calyx closed, basin much more shallow than Red Canada. It bears almost entirely at the extremity of last year's shoots, which are thus enlarged at that point, making quite a bunch, where last year's fruit was borne."

I wrote Mr. Plumb and stated that the specimens taken to Wisconsin in the fall of 1893, by Mr. Hoxie, could not have come from the Province of Quebec, but probably from Ontario—and, furthermore, I am of the opinion that Downing's description of Red Canada more correctly corresponds with the fruit as grown at Hudson than that of Baltimore.

Downing, however, says "Red Canada is not now much planted on account of its small size and poor fruit." This has not been the experience of those who have grown that variety here. Under the most careless cultivation, and the disadvantageous conditions above mentioned, the fruit is, at least, *medium* in size and often above medium. It will be interesting to hear something from growers in Ontario who have had experience with both Red Canada and Baltimore.

Montreal, Que. R. W. SHEPHERD, JR.

A Profitable Combination.—Villagers or persons who have but a small acreage will find the following plan a very good one if they desire to economize their space, which it is very often necessary to do, and always a good practice: I propose to plant a piece of ground fourteen by six rods to pear and plum trees, setting them about one rod apart each way, which will give six rows with fourteen trees in each, or eighty-four trees in all. Around this I shall construct a fence of wire netting six feet high. Just on the outside of this fence I build a chicken house large enough to accommodate about 200 hens (Plymouth Rock and Buff Leghorns), having the north side on the line with and forming part of the fence, and the south or front side freely exposed to the sun. The hens are allowed free range of this orchard—chicken park—and I expect the chickens and trees to be of mutual advantage to each other. The hens furnish nearly or quite all the fertilizers the trees require, while the trees will provide shade for the chickens. We are thus making good use of the ground while the trees are small. After they once come into bearing, with fairly good care, you have a right to expect largely increased profits. Pears and plums are seldom, if ever, a drug on the market. The chickens are also a great benefit in preventing the depredations of the curculio. We also keep bees, and thus add another element of profit and mutual benefit.—Gardening.

GINSENG.

FEW of our people had taken notice of a recent Act of Parliament protecting the plant Ginseng, which provides that a person gathering it between January first and September first in any year, may be fined not less than $5 or more than $20. Prof. Panton has taken the trouble to publish a valuable bulletin on the plant, which he first describes as follows:—"Main stem about one foot long, branches into these stakes at the summit, each three and one-half inches long; on the end of these are arranged fur leaflets, borne on slender stalks an inch in length. The leaflets are then smooth below, and of delicate structure; two in each cluster are about two inches long and others almost four, oval in general form, but tapering to a point and doubled toothed along the edge. Rising from the main stem and in the centre of the three compound leaves is a stalk three inches long bearing inconspicuous greenish white flowers, appearing not unlike a small head of white clover.

This *single flower stalk* is an important point, for I have found some calling a plant of this family ginseng (Aralia quinquefolia) which had four flower stalks and belonged to an entirely different species, though of the same genus.

The root of a specimen in the College herbarium is quite fleshy, rather short (three inches) and from it arises the single stem already described. By means of the above descriptions, technical and popular, together with the accompanying cut the reader will readily identify the plant ginseng from other plants in the vicinity.

FIG. 657.—GINSENG (*Aralia quinquefolia.*)

History of Ginseng —The genus Panax was first applied to it, and not Aralia; this was, no doubt, on account of its being considered by the Chinese as a panacea for all diseases. The name of the plant, among both the Chinese and the North American Indians, means, in their language, the figure of a man, and was given to it from a fancied resemblance of the human figure. In fact, much of its virtue seems to depend upon its form. With us there is little faith in its medicinal power, but the Chinese have unbounded belief in it and hence are eager to secure it. It was first discovered in Canada, near Montreal in 1716, by Father Lafitau, a Jesuit missionary among the Iroquois, and in 1718, a description of it was furnished. The French soon engaged in collecting and exporting it to China, and so great did the trade become that it gave quite an impulse to the commerce of Montreal for a number of years. At one time great numbers of Indians were engaged in gathering it about Montreal and Quebec, and large quantities of it were sent to China. In 1832 the shipments of ginseng from the United States amounted to 407,067 pounds, valued at $99,303. In one county in Wisconsin the trade is reported to have reached, in 1858, $40,000, and in 1859, $80,000. Immense quantities have been exported from Minnesota. At present the chief sources of the plant in the States are Ohio, West Virginia and Minnesota. About the close of the eighteenth century it was discovered also in Massachusetts, its exportation commenced and large returns obtained. During the last year, 75,000 pounds were sent from America. In the forests of Tartary, where it was once plentiful, it is now almost extinct, and hence has arisen the demand for it from America. It is not regarded of any value in this country as a medicine. Some are fond of chewing it, as the taste is rather agreeable, being sweet, bitter, somewhat aromatic and pungent. The fact that Chinese doctors claim that the roots of different shape possess widely different medicinal properties, indicates that its healing virtues are more of an imaginary character than real. But faith in its virtues continues, and as yet a great demand for it exists. The Chinese physicians introduce it into almost all their prescriptions for the nobility, to heal the sick and increase the vigor of the healthy.

A traveller in China remarks, he never entered a drug shop but ginseng was being sold. Volumes have been written by Chinese doctors upon its medicinal powers, asserting that it gives ready relief in extreme fatigue, renders respiration easy, strengthens the stomach, promotes the appetite, relieves all nervous affections and gives a vigorous tone of body, even in extreme old age.

The following figures, taken from the *Canadian Pharmaceutical Journal*, April, 1891, will give some idea of the trade in ginseng in Canada:

The quantity sent out of Canada last year is stated to represent $100,000, and one retail druggist exported $1,600 worth. From along the Kingston & Pembroke Railroad fully $20,000 worth was shipped. The price realized was from $3 to $3.50 per pound for dry roots. The question is now being considered whether it would not pay to cultivate it.

A writer in Vick's Magazine writes as follows upon the cultivation of

ginseng: I have recently taken the roots from three beds (3 x 16 feet each) which had been in cultivation, one five years, the other four years. The combined product of the three beds was 1,074 roots, which weighed 73 pounds; from these I assorted out 833 roots, 20 pounds, for transplanting again, leaving 53 pounds of clean washed roots to be dried for market which made 17 pound dry, which I have sold for $4 per pound, 50 cent per pound more than common wild roots sold for. It will be observed that the stock has only been decreased 241 roots. The 833 roots taken off for replanting were much larger than the roots with which the beds were originally stocked. The seed produced from the three beds during the time was worth at least $40.00. I have at this time (November, 1893) in my garden 32 beds 3 x 16 stocked with roots and seeds; also over 30,000 seeds in forest nursery beds. I have this season's crop of seeds, about 100,000, packed in loam in condition to promote germination, ready to be sown next season. The figures I have given show something of the possibilities in ginseng culture. The results certainly were far beyond my most sanguine expectations.—Vick's Magazine.

Plant Digging Device.—Here is an implement for lifting plants which I have used for a number of years, and find very convenient The handle was taken from a discarded snow shovel and fitted with a strong ferule. The blade was made from a piece of heavy buggy spring, the heavier part being drawn to a shank by a blacksmith, and driven into the handle. The brace on the under side, made of heavy strap-iron, serves both to pry across and as a foot-rest. It also serves to cut out plantain and dandelions from the lawn, as it removes the whole crown, and is so small as not to disturb the grass roots. With a little practice, one can stab the blade down by the root, holding the tool in one hand, and throw the root out almost with the same motion. I think it would be just the thing for lifting celery when grown.—American Gardening.

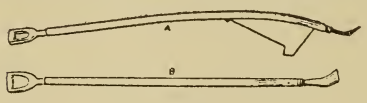
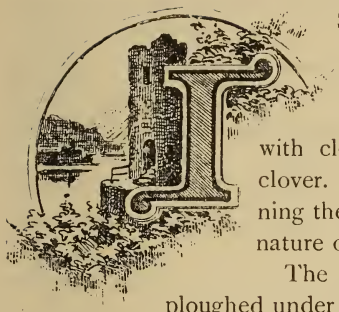


FIG. 658.

FOR some years past the N. Y. Experiment Station have succeeded in treating gooseberry mildew with complete success. The treatment has been to spray the bushes, as soon as the leaves appear, with a solution of potassium sulphide (liver of sulphur) made by dissolving one half ounce in one gallon of hot water. Hot water is used in preference to cold for the reason that the sulphide dissolves more readily in it. The solution is sprayed upon the plants at intervals of about twenty days throughout the season. The cost of the material is a mere trifle—one cent's worth is enough to spray about twenty-five bushes—and the labor is not great.

GROWING STRAWBERRIES.



I SEE many methods described for growing strawberries, but have never seen my plan mentioned by any one. I select a field most favorable in soil and location to suit me, get the land seeded with clover—fall wheat preferred as a mother for the clover. In autumn or winter, tile-drain thoroughly, running the drains from two to four rods apart, according to nature of soil and lay of the same.

The clover is allowed to grow about all it will, then ploughed under (with a wide plough); from 15th to 20th of June is usually the best time. I keep the surface worked enough to keep down weeds for six or eight weeks, then plough again, top work enough to keep down weeds and thistles until late in autumn; then plough again, in wide lands; this time we follow the ordinary plough with another team and subsoil plough, which loosens up the subsoil six to eight inches deep, but does not throw any out.

We endeavor to run the drains across the field as much as possible and plough the opposite way, which I think gives deep and thorough drainage; it also renders a much better circulation of air through the soil, the plants root deeper and stand drought much better than when land is not so treated. We give a light dressing of ashes in the fall, when we have them, and always top-dress rather heavily with fine manure during winter or early spring.

About the first of May we prepare the land by thoroughly cultivating, harrowing and rolling (never plough clay in spring that was ploughed in autumn); we mark out crossways with marks 2 ft. 6 in. apart, lengthwise 4 ft. apart; cultivate both ways with the horse, until runners get to pushing out strong, then we cease cultivating across the field and allow runners to root. We keep off all blossoms the first season, also cut off runners until they begin to come strong and numerous.

As soon as ground freezes hard enough to bear horses, we mulch with wheat straw; in spring go along and part this from over the plants, leaving it between the rows for pickers to kneel on; it also holds moisture in the soil, keeps down weeds, and keeps fruit clean. As soon as the last picking is made, we go on with the mowing machine and cut off all leaves, also weeds that have sprung up; as soon as well dried—two to five days, according to weather—I watch for a favorable time in middle of the day, with some breeze, and fire the patch, which will burn over in a few minutes, destroying all weeds, if there be any, also all insects, and rust. As soon as rain comes, we go on with the cultivators again and cultivate occasionally until fall, very little hoeing being required as a rule; mulch again with straw; this time, as soon as through picking, we plough all under.

We have never taken off more than the two crops, a third might pay if weeds and grass did not get in too much. I have followed this plan for six or seven years, and think it the best plan for my soil (a light clay loam with a more or less porous subsoil; though in one or two cases I removed the hay before ploughing.

By planting 1½ to 2 acres each spring, we have 3 to 4 acres in fruit each season, and get a large quantity of fine berries. In the summer of 1892 we ploughed under, instead of cleaning out our fruiting bed, so last season only had 2½ acres of new bed; but in spite of a drought which cut off the last end of the crop, we sold 16,600 boxes; this does not include any that were used in the house, or what was eaten by from 30 to 50 pickers daily, which would be over 1,000 quarts more.

I intended to say something about varieties, but as I have already spun out too long, will stop for this time.

Arkona, Ont. J. H. HILBORN.

Mulberries for the Home Garden.—If a family had no other kind of fruit than the mulberry, it would, no doubt, be highly valued and duly appreciated, but where the mulberries will thrive, other and better kinds can certainly be raised in abundance; so, with this fact in mind, I would say to all who own a garden, plant a mulberry tree or two if you wish, for the children and birds, but other and better kinds for your table and for sale, if there is a surplus beyond the home demand. The trouble with the best of the mulberries is the difficulty in gathering, as the berries ripen very unevenly, only one here and there on a twig or large branch, compelling the picker to go all over the head of even a large tree to get a few pints or quarts at a time, and when gathered each berry has a woody fruit stalk attached, which forms a good handle for eating the berries out of hand, but if there is any stewing or cooking to be done these fruit stalks must be removed with scissors or knife, and the housewife or cook finds this a slow and irksome task in preparing the fruit for use. Of all the numerous varieties I have tested I like the Downing best, because it is of the largest size and has a rich, sub-acid, sprightly flavor, somewhat like that of a well-ripened blackberry.—Am. Agriculturist.

Growing Tuberoses.—The following simple method of growing tuberoses has been found successful: Keep them in paper bags in a cool place till May, then plant them in good soil in the garden. There they grow steadily and hardily, producing stout flower spikes till the autumn when the plants are taken up and potted. Plants thus treated grow rapidly, twelve to twenty blooms on a stem, and afford a valuable supply for cutting for an unusually long period.

STRAWBERRY CULTURE FOR BEGINNERS.

HE prospective strawberry grower should not set plants from an old exhausted bed; neither should he set strawberry plants at all, unless he can and will give them proper care and culture. The selection of varieties is always a difficult problem for the beginner, and is a problem to which, owing to varying soil and climatic conditions, no one can give him the exact solution. It is a safe rule, however, to make a selection from among the standard varieties, avoiding high-priced novelties. Those wonders at $2 per dozen will either be much cheaper or quite forgotten in a year or two. You cannot go very far wrong if you select Haverland, Warfield and Crescent for main crop, with one-third as many of Beder Wood, Woolverton and Lovett's Early for pollenizers, with perhaps Gandy and Parker Earle for late varieties. Then by adding a few new ones each year from among those most highly recommended by growers, and discarding such as prove undesirable, you will soon have a selection difficult to improve upon. Set on land well manured for the preceding crop or crops, using bone and potash liberally at time of setting and nitrate of soda at such times and in such quantities as the plant growth might warrant; but plenty of good stable manure thoroughly fined and incorporated with the soil, with a liberal application of wood ashes, will come nearer meeting ordinary conditions, and will bring no disappointment at picking time if all other requirements are met. The broad matted row system gives the largest yield, and if not allowed to mat too thickly, the berries will be of good size and quality; but remember that surplus plants in a row are quite as bad as weeds, perhaps worse, because they are usually unsuspected robbers. I would recommend setting a new bed each spring, ploughing the old one immediately after picking the first crop, though some find a second crop profitable. As to marketing, get a good supply of clean baskets and crates, see that your berries are carefully picked and that the baskets are well filled, get up as good a team as you can afford and don't forget to spruce up a little yourself, for the larger part of your dealings will be with the ladies. Then if you have raised some nice berries and offer them at a reasonable price, the question of marketing will soon solve itself. Master all the details by reading the best authorities, begin in a modest way, enlarge gradually, and if after picking one or two crops, you find yourself fairly in love with your berries, go ahead. But if your efforts result in straggling rows wherein lurk a few puny berries lost in a tangle of grass and weeds, you cannot quit too soon.—Farm and Home.

Always pick your flowers early in the morning, if possible, you will find they will keep better than those gathered at midday. Roses will have to be cut at different times, but avoid cutting when the sun is hot.

ROSES.

Seasonable Suggestions.

ROSES in the garden will in all probability be attacked by the Thrip as soon as the foliage appears. Spraying with Paris Green will be found an effectual remedy, a small quantity of soft soap, or even common soap, added, will make the remedy more effective. Care should be taken to burn all the wood pruned out of the Roses, as that is where the Thrip winters in the larvæ state, and as many of the Roses are alive to the tips, or nearly so, this spring, a large number of the little pest will probably be found at work.

Examine all budded Roses and remove all suckers that may have been overlooked last summer, this is of very great importance, as the suckers if allowed to remain, invariably destroy the Rose bush. In pruning, the strong growing varieties should not be cut back as closely as those of a medium or weakly growth, for instance, if a strong vigorous bush of John Hopper were pruned as closely as Louis Von Houtte, the great probability is that John would produce elegant canes but little bloom. Some objections may be taken to this plan, but as a set-off, there is a certainty of great numbers of Roses.

The old question of budded or own root Roses, comes up fresh as ever every spring, and there is doubtless something to be said for and against either. Roses budded on the Manetti stock will succeed in a greater variety of soils than roses on their own roots, and some roses, such as La France, will attain a good size budded on a strong stock, while on their own roots they have sometimes a struggle for existence for the first year or two. The only objection to the budded Roses is that they are liable to throw up suckers from the stock, which if left to grow will injure the Roses.

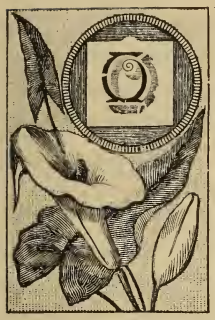
The "nice black mould from the woods," is the source of many a total failure among Rose amateurs, it is doubtless desirable for some plants but Roses will have none of it, a stiff clay suits them much better.

Reference was made on page 137 to the comparative merits of Gloire de Dijon, and William Allen Richardson. The writers experience has been, that while the old Gloire de Dijon is hardy enough to survive our winters with slight protection, and is a strong grower and an abundant bloomer. W. A. Richardson was, when grown under similar circumstances, a free grower, but an unusually shy bloomer; what few blooms were produced, were however very fine.

A very good plan for growing the strong-growing varieties, is to plant a number of them together and, instead of shortening back the canes, simply to thin out weak shoots, and to carefully bend down the canes, securing the tips to the ground by means of pegs or otherwise; this will cause the eyes along the entire length of the canes to send forth shoots and bloom, that would never have started had the cane remained perpendicular.

Hamilton, Ont WEBSTER BROS.

RECENTLY INTRODUCED SHRUBS.



OUR gardens have been enriched, within a few years, by the introduction of a number of shrubs having great merit for ornamental planting. I will give a brief description of a few of these, which will probably be hardy in parts of Canada, and which are worthy of trial in all the Provinces.

We are indebted to the Arnold Arboretum for more of these recent introductions than any other source, and of the plants that have come from there, one of the most important is Berberis Thunbergii, a dense growing, thorny bush, with crowded small leaves, pretty yellow flowers in spring and bright red fruit in fall, that holds to the bushes nearly all winter without losing its brilliancy. The plants can now be obtained from several nurseries, in quantity, at a low price.

The Rosa multiflora is equally as hardy and promises to be next in importance. It is a vigorous growing, green barked rose, that will scramble into a tree to the height of fifteen or twenty feet. In June it is covered with pyramidal clusters of small white flowers with a mass of yellow stamens in the centre. The foliage is pretty and seems to be more free from insect enemies than most roses. The abundant red fruits, which hold on all winter, are especially attractive in connection with the green stems. Mr. Jackson Dawson has raised at the Arboretum, from which this plant came, a number of interesting hybrids.

Ilex crenata, a small leaved holly, has proven hardy about Boston for a number of years; if it should be entirely hardy, it will be a great acquisition to the few plants of this class. Apparently we have only one sex, so that fruit is not formed; but if in addition to its green foliage, it has attractive berries, it will be a plant for every collection.

Stephanandra flexuosa is another recent introduction, coming through the Arnold Arboretum, which has a very beautiful and delicate foliage and pretty, fine flowers. It seems hardy enough here, only the tips of its branches being occasionally killed. If it should have the habit of a herbaceous plant in parts of Canada, it would still be worthy of a place in gardens.

Rosa wichuriana is another decided acquisition. It is a hardy trailing rose with almost evergreen foliage here. It hugs the ground closely for some years, then slowly piles up in a thick mat of stems. The flowers and habit of the plant are very much like the Macartney rose of England, which is not hardy. Its white flowers are large, about two inches across, with yellow stamens, and they come in June and July.

These are among the best of the new plants, and they should receive the attention of all those who are interested in good shrubs.

Brookline, Mass. WARREN H. MANNING.

HEDGES.

URROUNDING our principal school grounds, several acres in extent, and enclosing a large number of our finest private residences, the Hawthorne, Spruce and Beech Hedges of Yarmouth, excite the wonder and admiration of visitors. The common Scotch Hawthorne is used, to which Burns refers in his "Cotter's Saturday Night."

"Beneath the milk white thorn that scents the evening gale,"
Fond lovers in each other's arms breathes out the tender tale.

Three year old plants are imported, costing, delivered here, about eight dollars per thousand, the ground is properly prepared, drained, dug over and fertilized, the plants are set early in the spring, being among the first to grow, in double rows, ten or twelve inches apart, breaking joints, they are pruned two or three times a year to make a dense, bushy hedge, and allowed finally to attain a height of five or six feet, or in some cases, twelve or fourteen, that is proof against man or beast, dog, goose or small boy, and a perfect protection from the wind.

I can remember the first of these hedges, set out over *sixty years ago* and *still one of the best.* About thirty years ago, to improve its condition, it was cut back to the single stem, which was then hacked and slashed when it was desired new buds should break, and within a few years the whole hedge was in finer shape than ever.

A few specimens of this single White Hawthorn have been allowed to grow, without pruning, to a height of about twenty feet, with a diameter of trunk of (12) twelve inches or more, and in some cases whole hedges have been neglected and permitted to grow to their full height. In June these are a mass of white bloom of most delightful perfume, filling the whole air with fragrance. The double white, single and double, rose and red Hawthorn, are grown singly among our favorite ornamental trees, and are very beautiful during the brief period of bloom, but are destitute of fragrance.

Hedges of the native Spruce from six to twenty feet high, are also grown to perfection; they bear pruning equally with the thorn, and in the winter season, in their comfortable dress of living green, opposing as impenetrable barrier to the fiercest winds, seem preferable to a deciduous hedge.

The Norway Spruce fails here *utterly* everywhere, in hedges the lower limbs die, and as individual specimens, the growth is scraggy and irregular; out of the hundreds that have been planted, not a single fine specimen has ever been grown.

The Scotch Beech has been planted in hedges and as single ornamental trees, chiefly in our cemetery, it bears pruning well, and its perfect hardiness, its thrifty, rare a growth, and its fresh, pretty shade of foliage makes it a favorite.

No other Hedge plant has succeeded out of the many that have been tried, on the recommendation of the ubiquitous tree agent. I recall the Locust, the Cedar, the Buckhorn, the Privet, and the Box, among the failures.

Yarmouth, N. S. CHAS. E. BROWN.

The Kitchen Garden.

THE VEGETABLE GARDEN.

THERE is something about every vegetable that makes one think when it comes that it is more desirable than any of its predecessors, and I always feel so when I commence to gather that most delicious fruit, the cantaloupe melon. This is one of the musk-melon family and is too well known to need any lengthy description. It should not be planted until the ground is warm, as it is almost as tender as the squash. Plant in hills and thin out to two or three plants in each hill. When the plants have made four leaves the ends of the main shoots should be pinched off, which will cause the lateral branches to put forth sooner than otherwise; this will strengthen the growth of the vines and the fruit will come earlier to maturity. The Arlington, Montreal and Hackensack are three as good cantaloupe melons as grow. About fifteen hills will give a good supply.

Water-melons are cultivated the same as musk-melons, but are not grown in this section with equal success, as our seasons are not long enough to bring them to that perfection which this vegetable reaches further south. Mountain Sweet, Vick's Early, and Phinney's Early Oval are good sorts. It will not take much room to try a few hills, and so if our watermelons are not successful it need prove no great loss.

The squash is one of our tender annuals and until all danger from frost is past it should not be planted, as, aside from the tender nature of the plant, the seed is liable to rot in damp, cool weather. Make the hills eight or nine feet apart and thoroughly manure them. Place seven or eight seeds in each hill so as to have plenty for the bugs, but as soon as the plants are well up thin out to three plants in each hill. The bush varieties, such as Summer Crookneck and White Bush Scallop, can be planted nearer together, say six feet apart each way. Press the seeds down firmly before covering and cover early-planted ones an inch deep and late ones two inches deep. Fine plaster is about as good an article as has yet been found for driving away the bugs Plant Early Summer Crookneck and White Bush Scallops for summer use; Boston Marrow for fall, and Hubbard, Essex Hybrid and American Turban for winter. Be sure and gather the crop before it is nipped by the frost if you wish your squashes to keep well. A dozen hills of the summer kind will be enough, but quite a quantity of the fall and winter sorts should be planted.

Tomato plants should be set out in rows about June 1. Their cultivation is very simple. Set them six to eight feet apart, make the ground very rich and keep them free from weeds. Just before frost take up the vines with all the earth that can be made to adhere to the roots and place them in the cellar, and the tomatoes which have not been picked and are fully grown will ripen. I have

seen perfectly ripe tomatoes of excellent quality on the table at Thanksgiving which were ripened in this way. Favorite varieties are Acme, Livingstone's Perfection, Cardinal, Essex Hybrid and Emery. There are so many good tomatoes that it is hard to make a selection ; but anyone who plants any of these kinds will be satisfied. Set out about thirty-five to fifty plants to have a good supply all summer.

The turnip is propagated from seed and it should be planted where the plants are to remain as they do not do well when transplanted. For early crops sow as soon as the ground can be made ready in the spring, and thin four to eight inches apart according to the size of the variety. The principal trouble in planting turnips is in getting them so thick that much work is made in thinning. Swede turnips are planted later, about June 1, while the purple-top varieties may be planted either early or late ; a good crop may be secured as late as August 15. The Sweet German turnip is a very desirable sort for winter, as is also Carter's Imperial Swede. These turnips should be planted from June 10 to 20 for the best results. The Sweet German turnip is commonly known as the Cape turnip and is raised extensively on Cape Cod, Massachusetts. Do not fail to have a plentiful supply of this excellent vegetable for winter use..—*Ex.*

The Currant Bush Borer.—The parent of the now common and widely distributed currant bush borer is a small, slender, dark-blue moth with transparent wings, but rarely seen except by entomologists, who know where to look for such insects, or breed them from the larvae found in the stalks of currant bushes. These moths usually appear in July, and the females deposit their eggs singly at the axils of the leaves and on the vigorous young shoots. When the eggs hatch the minute grubs bore directly into the stalk until they reach the soft, succulent pith, following this and feeding upon it until they arrive at maturity the following season. This destruction of the pith of the cane so weakens it that it is very likely to be either broken off by winds or it dies the next season before the fruit comes to maturity. But sometimes the cane is not killed the first season, especially if the grub bores its way from some lateral twig into an old cane, and the latter may live a year or two after its pith has been completely bored out ; usually, however, the presence of the borers may be detected by the feeble growth of the young canes and their pale green or yellowish leaves late in the summer.

By carefully examining the bushes in August and September, or very early in spring, the infested canes can be found, and these should be cut out back enough to reach sound pith, and the part removed and burned, in order to destroy the grubs within them. No other effectual way of getting rid of this pest has been discovered, but this is not at all difficult or expensive, and it should be repeated annually, so long as a grub is to be found in the bushes.—ANDREW S. FULLER, in New York Tribune.

TO GROW THE FINEST TOMATOES.

ELECT a sandy loam with a southern exposure. Put on well-rotted stable manure at the rate of 10 to 15 loads per acre. Plow and harrow well, so that it may be thoroughly incorporated with the soil, or in place of this, 2 or 3 shovelfuls of rich compost may be added to each hill. Sow the seed, and sow only that purchased from reliable dealers, or saved from the finest, earliest specimens, in the hot-bed, the first of March. When 2 in. high transplant into cold frames, 3 or 4 in. apart. Be sure to shade and water the plants until well rooted. Transplant again, when 4 in. high, 8 in. apart. This will make fine, stocky plants, with strong roots. Of course, protect the cold frames from frosts or storms by covering when necessary, but manage to give light and air as soon as possible after the danger is over.

By all means be careful not to set the plants in the open air until all danger from late frosts is over. The risk is too great and you gain nothing, as the plants are growing faster. If properly transplanted, the earth made "firm" around the stalks, they will be retarded very little. It is better if possible to set just before a rain, or if this cannot be done late in the afternoon, so that they may have the coolness of the night to revive in, but if strong plants and well set, they will wilt but little, and in a day or two will look as thrifty as ever.

Set the plants 4 by 4 ft. each way with the exception of the dwarf Champion, which will bear 3 by 3 ft. Cultivate both ways with a horse cultivator. Should an unexpected frost occur after setting in the open ground, the plants may be saved, unless very badly frozen, by a thorough sprinkling with cold water. We once saved half an acre by this means; but it must be done before sunrise. In the North, where frost comes early in the fall, pull the vines before frost; throw them in a large pile or piles and cover with hay or straw. Green tomatoes, matured enough, will ripen and repay you for the trouble.—Farm and Home.

DEATH OF A DIRECTOR.—On Tuesday, the 17th of April last, at his home at Cataraqui, near Kingston, Mr. David Nicol was suddenly removed by death. On page 132, Volume XV. of this journal, will be found an interesting sketch of his life, so that little more need he added at this time. He had been elected a member of the Board of Control for Experiment Station work, but was unable to attend the meeting of this Board at Guelph. He was also asked to act as one of the experimenters, but his duties as Superintendent of the Cataraqui Cemetery, and his own business, were, in his opinion, as much as he could undertake. The sincerest sympathy of our directorate is extended to the mourning friends, for we have lost a wise counsellor, and a contributor to this journal, whose valuable articles have been highly appreciated by its readers.

New Way to Bush Peas.—The old method of bushing peas by sharpening green limbs and twigs and sticking them thickly along each row, has a good deal of labor in it, and is moreover far from satisfactory in its results, for a high wind is almost sure to lay both bushes and growing peas flat along some portion of the rows. Then, too, the pods are often hard to get at when hidden away among the branches of some more than usually vigorous bush. A better plan is to stretch a length of narrow poultry netting along the row, holding it firmly in position by stout stakes, as shown in the cut The netting need not be wide, as it can be placed 6 or 8 inches above the soil, the young peas being able to catch on to it at that height. Such netting in rolls of 150 feet is little more than one-half a cent per square foot, and if kept housed when not in use, it will last a score of years. One's garden will look much neater for its use, while the peas can be picked from such a support with much more ease than from the old-style bush support.—Country Gentleman.

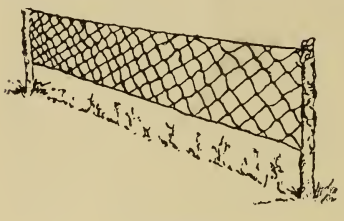


FIG. 659.

Packing and Picking Peas for Market.—Green peas should be picked as soon as the berry develops sufficiently to be perceptible, carefully avoiding such pods that are without contents or imperfect. Spread out in a cool, dry place until they are thoroughly cool and dry. Pack in the regular vegetable crate, settling it down well as you fill it, so as to have the package well filled, but do not press it. This is a very difficult vegetable to get to market in good condition, but usually affords best results when sent by express. In the early part of the season, when shipments come from distant points and peas are high-priced, packed in one third bushel boxes. Later on, when this vegetable becomes more abundant, use well-ventilated, sound bushel boxes. Peas that are overripe, discolored or wilted are almost unsalable in any market. Another great mistake is that of picking too soon, before half-grown or half-full. They heat readily in large packages, especially in barrels, sacks or tight packages, even when shipped by express. They should not be out over two days, or three at most, though they cannot be regarded very green or fresh if on the way longer than twenty-four hours in warm weather. In packing shake down thoroughly, and a little pressing down in nailing on the side pieces or cover of the box won't hurt them. Have them as cool and dry as possible before packing, to avoid heating. The least dampness soon heats them, or they get moldy, and the larger the package the greater the danger, to goods while in transit, especially unless packed under the most favorable conditions.—Farm and Home.

Forestry.

BLACK WALNUT TREES FOR LUMBER—II.

(*Continued from March No.*)

TREES grown to produce timber require very different treatment. In this case, the planting should be done in large blocks, and the land should be as well prepared as if for a crop of wheat. The nuts should be planted in rows about five feet apart and about the same distance apart in the row. The land should be kept in a high state of cultivation so that a vigorous growth may be assured. Vegetables may be grown between the rows. The cultivation may be done mostly by horse labor, and should be continued for eight or ten years, after which it will only be necessary to keep down extraneous growth and to see that the groves are properly pruned and thinned.

The tendency of trees growing near to each other is to grow taller and to put out fewer branches.

Pruning walnut trees consist only in cutting out the few small shoots on the trunk of the tree and to assist nature—by removing an occasional branch—in developing a straight upward growth.

Thinning a walnut grove.—Over 1,700 trees will be grown on each acre when planted at about five feet apart each way. As this number must be reduced to about fifty in forty or fifty years, it requires the exercise of much judgment and discretion to select about fifty of the best of these from this number that are about equi-distant from each other, and to remove the remainder from time to time, so that the trees selected for growth to maturity shall have sufficient room on all sides for proper development, and at the same time receive the necessary protection from the other trees to enable them to maintain their upright, sturdy growth for at least fifty years.

(2) Walnut groves may often be planted on land less valued for agricultural purposes. In many places, even in the thickly populated portions of the rural districts, areas of considerable extent may be found quite unsuitable for ordinary farming operations (although the soil may be of excellent quality) because of its being cut from the cultivatable portion of farms by a small river, a ravine, a rocky ridge, a railway, or other obstacle; or where the land may be low lying, the soil very rich and deep and so intermixed with boulders to the depth of several feet, as to render it almost worthless for ordinary cultivation; hundreds of acres of this description may be seen from the railway between Omemee and Peterboro', as also in thousands of other places throughout the province. Planting such lands with walnuts and subsequently managing them with ordinary intelligence would ultimately prove to be more profitable and safe investments and more beneficial to posterity than in cultivating the best lands after the manner usually prevailing at present.

The want of shelter from fierce north-west winds during the inclement seasons of the year for the crops, the orchard and garden, the stock and the farm buildings is everywhere felt and admitted to be necessary throughout the well-settled districts of Ontario, and no other kind of tree is more suitable for this purpose than the walnut ; for when grown along the fences, where they are exposed to the storm from all points of the compass they branch near the ground and become, that most desirable of all wind-breaks, one that affords the necessary protection, and at the same time permits free circulation of the atmosphere on the sheltered side.

The soil of the greater portion of the land referred to, consists of calcareous clay, enriched by the accumulations for ages of decayed vegetable matter, overlying and mixing with alluvial deposits; such soil contains all the necessary elements for the growth and developement of black-walnut lumber of the best description. The great need of shelter and the suitability of the soil being admitted, every farm owner should see that walnut trees are planted along all permanent fences, and also along the road sides, without further delay, and in twenty years from this time, provided other conditions remain as at present, it will be found that such farms may all sell for twice the sum which can be obtained for them now.

The beauty and the utility of its growth on the farm during the development.—The cut at the beginning of this paper (page 94) representing a pleasant rural scene of European life, conveys but a faint idea of the truly majestic appearance of the walnut tree grown on the lawn or other places where it has sufficient room for its full development on all sides.

It then becomes one of the grandest trees known. Upright in trunk, growing to a great height ; a wide-spreading head—rugged in outline—with its lower branches often recurving to and sweeping the ground ; the lovely green of its long divided leaves always retaining the purity of its color throughout the season or until scorched by early autumn frosts.

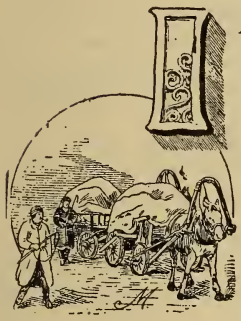
The time has not arrived when *matured* cultivated specimens of the walnut tree may be found in this country although specimens of good size may occasionally be seen. The best tree it has been my privilege to see stands on the lake shore, in the Township of Hillier, Prince Edward County. The owner of this tree assured us (the late P. C. Dempsey and myself) that his grandfather had planted the nut from which this tree grew, about 70 years before. It is a magnificent specimen : the trunk is perfectly erect and carries a beautifully symmetrical wide-spreading head, forming a noticeable feature in the landscape when approaching it from the south-east, at a distance of several miles.

The late Mr. James Dougall, of Windsor, Ont., when writing of the walnut tree said, "Owing to its gigantic size, its beautiful and graceful appearance when at maturity, its quick growth and the great value of its wood in a commercial point of view, besides its value as a nut-bearing tree, it is first of its class. It is in every way adapted for road, lawn or grove planting, where the soil is suitable." Mr. Dougall planted some one year old trees in 1853, but soon after cut down

most of them including the largest, to make room for some building; one of those remaining in 1881 measured three feet six inches in circumference six feet from the ground, and was upwards of forty feet high. Mr. Dougall also says, "Had the *nuts* been planted where the trees were to stand, and had they not been injured by buildings so near them, they would probably have been much larger."

Lindsay, March, 1894. THOS. BEALL.

CANADIAN WALNUT GROWING.



I AM pleased to see by your March No. that our old and much respected friend Mr. T. Beall, of Lindsay, is still fond of discoursing upon his most favorite topic "The Canadian Black Walnut," and frequently with much acceptance. It is most certainly a very fruitful theme, and one is scarcely able to express all its rich treasures of pleasure and profit in a single lifetime. Although in many times and seasons in the past we have been deeply stirred and liberally instructed by his sage and mature discoveries in this and other lines, yet it is somewhat surprising now in this eminently "advanced age" to realize some of the statements and conclusions that his well-ripened wisdom heedlessly brings him to amid the profound blazing light of this present time. Allow me, Sir, to example as a key to my meaning a few of the statements of this paper of Mr. Beall's upon "The Black Walnut Tree for Lumber," as given in the said No. of the CANADIAN HORTICULTURIST.

After speaking of the advantages and needs to us as a people of timber planting, and enumerating some of the good points of the Black Walnut for these purposes, the writer goes on to say on page 96, "With regard to propagation and culture," that these are to be done especially for three important purposes, namely, "for shelter, for ornament, and for profit." This by itself being rather a queer annunciation when you come to take in the situation properly, viz., *timber growing for lumber.*

Again, with regard to Walnut tree propagation, he advises "that it is of the utmost importance that the nuts be planted where the trees are to grow," and then goes on to prescribe that holes be made in the ground with a sharp pointed stick, and the nuts be forced down into them with the other end, and lastly that the holes are to be filled in with the soil, etc. This last stroke of advice reminds me very forcibly of the statements of a gentleman of my recent acquaintance near the city of Guelph, who, being very anxious to establish a young forest on one of his new stumpy fields on the back of the lot, made an effort thereto. For this purpose he went to the highways and open fields, and

clearings, and roughly dug up a large quantity of young and tender seedlings of Maple, Beech, Basswood, Ironwood, and various others, as fortune offered them to his quick perception, being from four to six feet in height, and brought them home by the wagon load. He now proceeded to plant them in his new half cleared turfy field, and in spots where it happened to suit. And how did you get them in we enquired? "Oh," said he, "I just took an old axe and thrust holes in the sod, and then stuck my small trees into these holes, and pressed them down with my feet and all was done!" About six months after the event, the sight was transparently disappointing, and the prospect of forest trees for the birds on that field was very far in the distance.

But to return to our theme. I want here to say that I think there are better methods of procedure, and many of them in this matter, than the one Mr. Beall has outlined for us, notwithstanding the sagacity of its conception.

If this principle was essential and of first importance, what is to become of the immense world-wide experiences and practices of the world's nursery business of to-day, not merely with regard to the Black Walnut, but to all other classes and types of forest trees? I do not feel here and now that it is in my proper place to offer suggestions or to propose counter methods of procedure in the case, but I am sure that it must appear to any intelligent man with the least experience in these matters, that there are and must be of necessity some other method to produce more satisfactory results than here indicated and marked out.

Allow me to say finally that I am deeply pleased that the CANADIAN HORTICULTURIST has opened up the "Department of Forestry" in its pages for discussion. It is a department that should have even more attention given to it for our benefit when we consider the fearful rate of denudation annually going on of our Canadian forest growth and beauty. What the future is to do for want of these things, unless speedy and liberal plantings are made, none of us can now possibly tell. It is to be hoped, however, that this whole question of tree planting, not only and merely of the Black Walnut, but also with regard to many others of our most valuable, most varied and beautiful forest trees of home growth, may sufficiently appeal to the good sense and keen Canadian judgment of the whole of our people, and at once.

Strathroy, Ont. B. GOTT.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE FRENCH TREATY seems about to be ratified, notwithstanding all our appeals. A committee of our Association, consisting of A. H. Pettit, of Grimsby, Alex. McNeill, of Windsor, and W. Boulter, of Picton, interviewed the Hon. George Foster and others, who carefully noted all the injurious results to the grape industry, threatened by this treaty.

FOUR OR FIVE FRUIT EXPERIMENT STATIONS are to be established in the Province of Ontario this spring. The committee appointed at Peterboro' has since prepared an excellont scheme, which has received the approval of the directorate and also of the Minister of Agriculture. It contemplates ten stations, in various parts of the Province. The experimenter in charge of a station is to be a specialist in growing some one or more kinds of fruit; thus, for example, a grape grower of large experience is to be asked to experiment with grapes; his stock of varieties is to be enlarged to cover all kinds worthy of trial, and he is expected to report on all the varieties on his grounds several times each year. In addition, he would be given plants and trees of other fruits, which it is desirable to test in that locality.

The following is a list of the stations proposed to be established at once, with the estimated expenditure:

STATIONS AND LOCALITIES.

No. 1.—*Apples, pears* and small fruits. Located in Prince Edward Co., managed by W. H. Dempsey, of Trenton.

No. 2.—*Apples*, grapes, plums, and strawberries, currants, gooseberries and cherries. Located in Simcoe Co., and managed by G. C. Caston, Craighurst.

No. 3.—*Plums*, apples, pears, grapes and small fruits. Located in Huron Co., experimenter not chosen.

No. 4.—*Grapes*, currants, gooseberries, plums, pears, cherries and blackberries. Located in Wentworth Co., and managed by Mr. M. Pettit, Winona.

No. 5.—*Peaches ana strawberries*, currants, cherries, gooseberries, raspberries, plums and quinces. Located in Essex Co., and managed by Mr. W. W. Hillborn, Leamington.

N. B.—The fruits italicised are those to which the station is to be more particularly devoted.

ESTIMATED EXPENDITURE FOR 1894.

Five stations at $100	$500
Trees, plants, etc., for five stations	200
Meetings of Board of Control	75
Travelling expenses of official visitors	75
Clerical work—corresponding with stations, purchasing stock, keeping lists and reports from each, tabulating same	50
Contingent fund	100
	$1,000

BUYING AND EXPORTING APPLES.—The Canadian Fruit Buyers' and Importers' Association has issued a circular giving the names of those apples which are found by practical experience best suited to the export trade. The following is a portion of the circular referred to :—

"It is absolutely necessary to improve the quality of our fruit if we are to hold our own in the foreign markets. The prevalent idea that European countries are unable to produce good winter apples is a mistaken one, they *are* producing, and in rapidly increasing quantities, fruit that is as good as many of our best winter varieties, and far superior in every respect to such kinds as the Phœnix, Pewaukee, Talman Sweet and others. This is notably the case in Denmark, Belgium, Holland, and parts of Germany and France. Growers in these countries are now becoming as much alive to the importance of this branch of their export trade as we are. Heretofore they have not marketed their apples in as good shape comparatively as Canadians—this will be obviated in the future, as a number of large Continental handlers of fruit visited the British markets last autumn, for the purpose of finding out the best kind of package, and the proper mode of packing the fruit to suit the demand. For some years past they have been planting and grafting, especially in Denmark, only those kinds of fruit which compare favorably with our best varieties, such as the Northern Spy, Greening, Seek, Baldwin, Golden Russet, etc. We cannot ignore these facts if we desire to hold our own in the foreign markets. It is

necessary to use much greater care in the planting of an apple orchard than in the planting of anything else. A mistake made in planting an inferior variety of wheat, corn, or any other kind of produce, may be rectified the following season, but this is not the case in setting out an apple orchard, and it behooves those intending to plant apples to exercise the greatest care possible. The Association strongly recommends the planting out and grafting only of those varieties which are in themselves intrinsically superior in quality, and meet with the market's requirements, having due regard to the locality and to the soil. The following kinds are known to be excellent in quality, and by thorough test have proved their superiority as good shippers: *Summer*—Duchess of Oldenburg, Alexander. *Early Fall*—Gravenstein, Maiden Blush, Cayuga Red Streak. *Late Fall*—Blenheim, Ribston, Twenty Ounce, Cranberry Pippin, King, Hubbardston, Fallawater, Fameuse. *Winter*—Northern Spy, Spitzenburg, Greening, Baldwin, Golden and Roxbury Russet, Seek and Jonathan.

"The Association would further recommend the re-grafting of all Talman Sweets, Phœnix, Pewaukee, Swaar, Jennettings, etc., with the Northern Spy, Golden Russet, or any of those varieties which are recommended to be grown. The Association further recommends that growers give more attention and care to their apple orchards. From the appearance of the majority of the orchards throughout the country one would suppose the growers imagined they had done their duty when they have planted the trees, and that nature is expected to do the rest. After planting the right varieties a thorough system of cultivation, and a proper pruning of the trees is as essential to the production of good fruit as a thorough system of cultivation and care is necessary in growing anything else."

This Association has invited the Executive of our Association to meet with them at Toronto, at an early date, to re-consider the grades of apples established for our export trade, in order that they may be satisfactorily adjusted for operation during the coming apple season.

BLACK KNOT—ERRATA. In paragraph 3, near bottom of page 128, should read, "A characteristic fungus is formed in them, fruiting in the knots from their earliest stage—and nowhere else."

OUR REPORT FOR 1893 will be one of the most interesting yet published. It will only be sent to those who have paid their membership to our Association. A bound copy will be mailed from the Department of Agriculture to names and addresses of paid members furnished by us.

A YELLOW BARKED VARIETY of the bright red twigged Red Osier Dogwood, Cornus Stolonifera, has been sent us by Mr. W. K. Manning, of Brooklin, Mass., one of the judges in landscape art at the World's Fair. The variety was found in Stockbridge, Mass., where the type abounds; and Mr. Manning calls it Cornus Stolonifera, var. aurea, or the Yellow Osier Dogwood. These plants are valuable as an edging plant for groups of large shrubs on account of its habit of spreading along the ground.

THE PLANT DISTRIBUTION.

SMITH'S GIANT RASPBERRY.—We have secured 100 plants of this black cap for distribution. It is said to be wonderfully productive, and larger than Gregg. It originated with A. M. Smith, St. Catharines.

We have also secured 100 Winchell grapes, 100 Moyer, 100 McIntosh Red apple, 200 Pearl gooseberries, 2,000 Michel's Early strawberry, 1,000 Saunders, some Woolverton, and Enhance strawberries.

THE CENTRAL EXPERIMENTAL FARM at Ottawa has sent us 600 Caragana arborescens, 200 Acer ginnala, 200 Prunus pumila, 100 Sarah raspberry, and 50 Eleagnus augustifolia. All these are being distributed among our members as quickly and as suitably to the various wants and localities as possible.

Description of Ornamental and Fruit Plants furnished by the Central Experimental Farm.

A BRIEF description of the ornamental plants furnished by the Experimental Farm this year for distribution to the members of the Society may be of interest to readers of the journal, and is given below.

ACER GINNALA, Ginnalian maple.—This was first introduced from the Amur River region in Asia, by Dr. Regel, the eminent Russian botanist. Prof. Budd, of Ames, Ia., and the late Charles Gibb, of Abbotsford, Que., were instrumental in bringing it to America; and the plants which are this year being distributed to the fruit growers are raised partly from seed grown at Ames, Iowa, and at the Experimental Farm at Ottawa. Nicholson says, "The tree is generally classed as a variety of *Acer tartaricum*, but its habit is more graceful, and in this form the leaves are prettily cut and lobed, whilst the leaf-stalks and mid rib are more deeply colored." It never attains large size, and should be ranked among the arborescent shrubs in this respect. In the early autumn it is a thing of beauty upon the lawn—resplendant in a dress of bright crimson—it glows like a ball of fire, and warms the whole landscape. Another characteristic much appreciated in the north is its extreme hardiness. At Brandon, Man., and Indian Head, N. W. T., it has been reliable so far.

CARAGANA ARBORESCENS, Siberian Pea Tree, as the name indicates, is a native of Siberia, and belongs to the pea family. It grows 15 to 20 feet high, and is very ornamental in early spring by reason of its light green, feathery acacia-like foliage, which is plentifully sprinkled with golden colored pea like blossoms. These are succeeded later by small pods enclosing the seeds, which may be sown as soon as ripe or kept till the following spring. They germinate very readily. Some 10,000 were grown here last year in two beds 4 × 10 feet

long. Like the maple this is extremely hardy. I have been recently informed that hedges of this tree have been grown by settlers of the Mennonite districts in Manitoba, which proves the assertion in regard to its hardiness.

ELAEAGNUS ANGUSTIFOLIA, Wild olive.—This was, I believe, introduced from East Europe by Prof. Sargent, of the Arnold Arboretum, as well as Prof. Budd, of Ames. It is closely related and resembles in many respects our Western Buffalo Berry (*Shepherdia argentia*), but is much more silvery in leaf and twig. It grows rapidly, but does not attain large size. The flowers are inconspicuous, appear in early spring, and are extremely fragrant. From the name wild olive, people are occasionally led to believe that it is a fruit bearing plant, which is quite inaccurate, as the fruit is entirely inedible. This is a very desirable bush for shrubberies.

PRUNUS PUMILA, Sand Cherry.—This plant is found growing wild in various portions of Western Canada and the United States, and being widely distributed, varies much in quality of fruit and character of growth. Its normal form is prostrate and depressed. In Nebraska it has been cultivated by early settlers for a number of years, and improved varieties will undoubtedly appear under cultivation before long. One is already being offered for sale under the name of Dwarf Rocky Mountain Cherry. This is claimed to be a special form native to certain regions of the Colorado Rockies. The fruit of the type is smaller than the Morello cherry, is nearly black when ripe, with a small proportion of pulp to pit. As a fruit plant it will be useful where the Morellos cannot be grown. It may be of much value as a dwarfing stock both for plum and cherry, and this phase is now under experiment. As a plant of possible value, and as a botanical curiosity, it is decidedly interesting.

The following description of the Sarah raspberry appeared in the Horticulturist's report for 1893 :—

SARAH.—(Record number 4-38.) Produced in London, Ont., by Prof. Saunders, from seed of Shaffer's Colossal. Plant a moderate grower, suckering freely, and propagating naturally only in this way. The foliage seems to be intermediate between the European raspberry, Rubus Idæus, and the American, Rubus Strigosus. The canes have been affected to some extent by anthracnose, but not more than Cuthbert or Marlboro growing along side. Fruit large, round; drupes large, deep garnet, firm, very juicy, pleasantly acid and exceptionally rich. A few ripe berries were found last year, and this year, at the time of the first picking of Cuthbert, but the main crop did not ripen till the season of Cuthbert was over, the last picking taking place each year from the 8th to 12th August.

A striking characteristic of this variety is its habit of ripening the fruit in consecutive order and much regularity, beginning with the terminal clusters of each branch. Of course this is in a measure true of all red raspberries, but none that I know of carry the peculiarity to the same extent.

Ottawa. JOHN CRAIG.

Question Drawer.

Carp.

640. Sir,—Can you inform me if it is possible to buy young carp in this country, and if so, where? Also address of any person who sells bees?

P. H. Dewdney, *Eglinton, Ont.*

Boilers for Making Jams and Jellies.

641. Sir,—Could you give me the address of any firm who manufacture small boilers suitable for making jams and jellies, with a capacity of about fifty or seventy-five pounds at a time? Could you also furnish me with the address of a firm who make tin pails for holding jams.

John Stewart, *Nanaimo, B.C.*

The G. H. Grimm Manufacturing Co., of Rutland, Vermont, who have a Montreal office, send us their catalogue illustrating a sugaring-off arch. This they make in any size required from 2x2 feet and upwards; the usual size is 2x4 and the arch ten inches longer. Instead of using tin, the pans should be made of copper. These cost f.o.b. at Montreal, $35. They also make an evaporator in the arch above described, which would probably be more satisfactory, as the liquid would not remain over the fire as long as it would in ordinary pans, and the result would be a better quality of product. Such an evaporator made of copper, complete with arch would cost about $50. Pails for jellies may be had from the Sydney Shepherd Co., Buffalo, N.Y., and possibly from Thos. Davidson & Co, Montreal. In Fig. 000 the pan measures 26x47x12 inches.

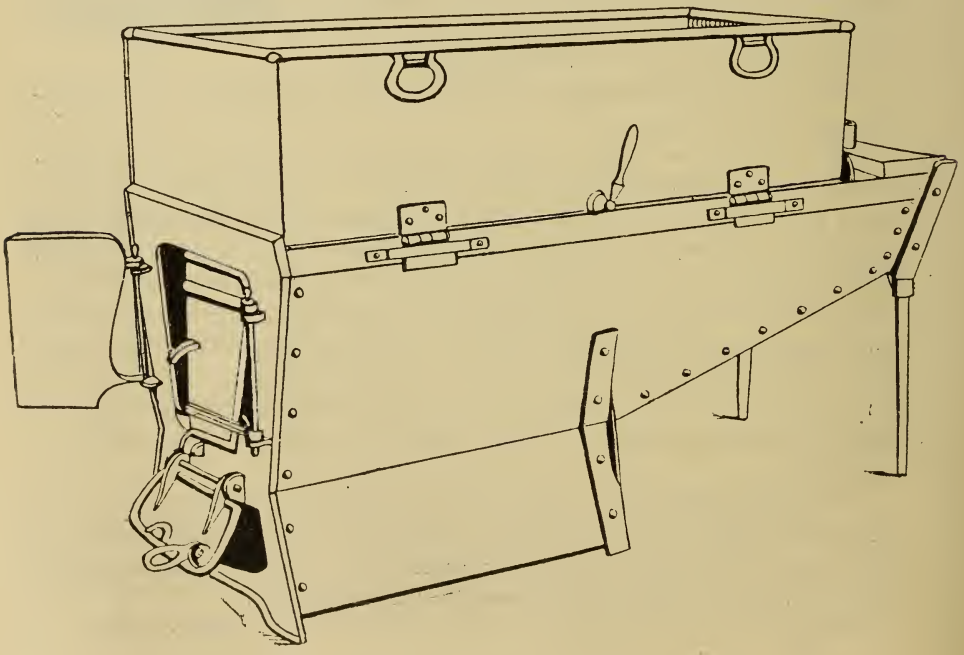


Fig. 660—Grimm's Sugaring-off Arch and Pan

The Ontario Apple.

642. SIR,—Is the Ontario apple hardy? Would it stand our climate? Is it a good bearer? What is its size? IRA N. BURTT, *Keswick Ridge, N.B.*

Reply by Mr. A. McD. Allan, Toronto.

The Ontario apple tree is, as far as tested, quite as hardy as Spy, and I think should succeed in York Co., N.B. It is a biennial medium bearer, the fruit being always well distributed over the tree, and generally of uniform size (which compares well with a good-sized Spy). Ontario comes into bearing early, and taking one year with the other, alongside of Spy in full bearing age, will produce much better results than the Spy. I think you will find it is successfully grown in parts of Nova Scotia, and I have never heard complaints of tenderness in the tree.

Best Varieties.

643. SIR,—Please name earliest and best of each of the following: Yellow, freestone peach; pear; plum; red, white and black grapes.

O. F. W., *Fort Erie.*

These kind of questions cannot be satisfactorily answered, because best in one place is not always best in another. In general we would name following in order: (1) Early Crawford or Foster peach; (2) Giffard and Bartlett pear; (3) McLaughlin and Imperial Gage plums; (4) Lady, Niagara and Diamond, white grapes; (5) Delaware, Lindley and Brighton, red; Moore's Early, Concord, Worden and Wilder, black grapes.

The Apple Tree Bark Louse.

644.—SIR,—I am much troubled with the bark louse on my apple trees. Can you suggest a wash to kill them, giving the quantity of each ingredient to, say a pailful of water. I have tried a number of the solutions advised, but don't find them any good.

J. MURRAY SMITH, *Montreal.*

The apple tree bark louse, known as the Oyster Shell bark louse, from the shape of the mature insect, is a very common and a very troublesome insect. Many orchards throughout the country are dying on account of its ravages, and the owners are not even aware of its presence. The only time in the year when it can be effectually destroyed by any wash is about the first of June, when the young lice hatch out. Being tender at that time, an alkaline wash, such as washing soda and water, is effective, using as much of the former as can be dissolved. The best remedy is spraying the whole tree with kerosene emulsion, a formula for which may be seen on page 161. In order that the liquid may have the better effect, the rough bark should be scraped off with an old hoe, previous to spraying.

An Ichneumon Fly.

645.—SIR,—A large plum tree in my garden has some little holes in the bark, about as big as pigeon shot; and as spring advances I find, by close watching, an insect coming forth of wasp-like shape, but smaller, leaving a cocoon at the outlet. I send you specimens collected last summer.

W. S. DANA, *Portland, Me.*

Mr. W. H. Harrington, of Ottawa, says these are the remains of a species of Ichneumon, probably Ichneumon acerbres, a common small black species. It is a parasite upon other insects.

Russian Apricot.

646. SIR,—Is the Russian apricot a success in Ontario? We have some which are thrifty enough and bloom well, but never bear fruit.

G. B. LINDENWOOD.

Your experience corresponds with ours at Maplehurst. We have a dozen Russian apricots which have bloomed freely for several years, but give us no fruit. This is apparently owing to the early period of blooming, which is subject to injury from the late spring frosts. If any of our readers are more fortunate would they please report.

Ashes from Cedar.

647.—SIR,—What quantity of ashes would be produced by burning a cord of cedar wood?

P. J. WILKINSON, *Cambray, Ont.*

Reply by Prof. Shutt, of Central Experimental Farm.

Dry cedar wood is very light, but I cannot guess even at the approximate weight of a cord of it. If your correspondent could furnish that datum, perhaps the weight of ash produced could in sound numbers be arrived at. We have no figures as to the percentage of ash of cedar, but from analogy I should judge it to be about one per cent. on the air-dried wood. The proportion of bark to wood would materially effect the weight of ash produced, since the percentage of ash in the former is, I suppose, about three times greater than that in the latter.

Grafting the Grape.

In answer to Question 639, by Alex. McNeil, Windsor.

Cleft-grafting the grape is frequently unsuccessful. A better method is a species of marching. Make a hole large enough to accommodate the roots of a good one or two-year old vine at the base of the vine to be grafted. Make a V-shaped incision in the stalk, as low as convenient, into which fit the new wood of the young vine. Tie in place, and keep earth around the stem to cover the union, leaving two buds of the scion exposed. Prune the old vine severely, to give the scion every advantage, but not enough to injure the root system. The next year cut the old stem off above the union and the graft below.

Open Letters.

Plum Knot Insect.

Sir,—I have read Mr. Gibbs' contribution on the "Black Knot" in your April issue with much interest, and also the reply by Messrs. Craig and Fletcher; and it is much to be regretted there are such differences between practical fruit growers, for such lead to carelessness and indifference on the part of many, which is sure to defeat union of effort in stamping out fruit pests. No doubt Mr. Gibb has been led into an error, and there should be no doubt that his opponents are right.

Of course, we all know it is a subject of great importance to fruit growers in Ontario, causing an annual loss of tens of thousands of dollars; and we are all doing a little—some of us very little—to get rid of the evil.

I will be greatly obliged if Mr. Gibb will kindly send to me, or to you, Mr. Editor, or to any interested entomologist, a few specimens of grub-infested black knots, on which the bark is not ruptured. For myself, I may say that after about forty years' rather intimate acquaintance with this pest, I have failed to find larvæ—grubs—in knots in which the bark was not ruptured; and I may also say that, on several occasions, I have kept the disease in check by cutting out the galls (knots) before the rupturing of the bark.

Wm. Brodie, *Toronto.*

Sir,—I see in the March No. a letter signed W. T. D., in which he gives an account of his success in fighting the black knot on his cherries, and was glad to see that it agreed with my own experience. I commenced about five years ago, as my trees were then young, and cut off the knot from the large branches and applied turpentine; the following year I started with the coal oil, which I have used ever since, and last year I applied the coal oil without cutting off, and it seems to kill them, the only difficulty is as the knot is not removed a fresh attack might be mistaken for the old ones, if not looked for carefully. Still, I believe that prevention is better than cure, and that can only be attained by the destruction of the diseased trees; but as the law now stands it is almost a dead letter, as a man does not like to inform against his neighbor and thus get his ill-will, so that the only way to carry out the law will be to appoint a stranger to look after it; say, let the district at first include two or three counties where these fruits are largely grown, and where their services would be appreciated, and gradually extend the area. The Bee-keepers Association succeeded in getting an inspector for foul brood, and it is pretty well stamped out of the Province. Could not the same man take both? This ought, I think, to engage the attention of the Fruit Growers' Association at their summer meeting, as it seems to me that is the only agency by which it can be accomplished, and I have written this to bring it to your notice.

A. J. Collins, *Listowel.*

Sir,—I have taken a great deal of interest in the Canadian Horticulturist, and I find it a very useful publication indeed, and I have been pleased to sound its praises to all I meet who are engaged in fruit growing, believing they can all benefit very much by its perusal. But yet I think we must use caution and consideration in accepting all its contents as infallible. I have been greatly interested these past three yeors in that pleasant and ennobling branch of industry—fruit growing—and I like to do all I can to further the interests of fruit growers, and I find your journal of signal benefit to me; yet I cannot fully concur with all I read in it without somewhat modifying some of the passages.

I notice on page 81 of the March number, a paragraph headed, "Are Novelties worth their Cost?" Prof. Bailey thinks they are. My experience, gained from careful observation, is that they are worth testing, but I think farmers and those intending planting should either leave them alone or go into them very cautiously and sparingly till they have become older and their good name has become an established fact, when they will always be obtainable at a much reduced price. I have seen a great many cases where fruit tree agents go through the country recommending some new variety of fruit, and selling it largely for a high figure, and the result of such has generally been failure, and the nurserymen and their agents thus acquire a reputation unenviable.

Of course, I think it well for our experimental stations, and those engaged in testing new fruits, to give all such new fruits proper trial, and persons who are actively engaged in fruit growing, who have the time and money to spare, may test them sparingly in their own localities. But I think it a mistake to plant a lot of new varieties before their char-

acter has been properly tested. It is too much like marrying a wife without having made her acquaintance. I like Count Von Moltke's advice—"Weigh, then accept"—better. We have seen too many cases of where new fruits receiving high recommendations have been planted largely by growers, and the result a failure. For instance, the Weaver plum was highly recommended, and sold at a high price at one time, and now it is almost discarded. Also the Moore's Arctic has been sold through many sections of Eastern Ontario for $1.50 each; and we can scarcely find a tree alive now, although it was said to be very hardy, of excellent quality and perfectly free from attacks of the curculio. This last is generally true, as there is scarcely ever any fruit seen on them down in this part of the country. So I think it well to advance slowly but surely. And especially the farmer or those who are planting for their own use will do well to plant nothing but well tested varieties, as experimenting is too costly and requires too much time for individuals to carry it on very extensively. W. J. KERR, *Smith's Falls, Ont.*

Prunus Simoni.

My Simon's plum, which you sent me two years ago, bore last year. The fruit was like a peach, but very bitter, even when preserved. A good many agents are selling them, and I think we should make it public that they are not of much value.

D. L. SKIPPER, *Mount Forest.*

Question Budget.

Any reader will please send in a reply to any question.

Will vegetables, such as onions, potatoes, etc., get tainted by growing in ground which has been enriched with fish manure?

Does it injure strawberries to pull them early in the morning with the dew on?

Do jams and jellies take a woody taste when put in small wooden pails? If so, what is the best method to take it out? JOHN STEWART, *Nanaimo, B. C.*

Could you tell me, through THE CANADIAN HORTICULTURIST, the value of flesh and the hair from the tannery, as a manure? What would it be worth a load? A member.

C. M., *Port Elgin.*

GROWING TOMATOES UNDER GLASS.—*Sir*,—How are they set on the benches? At what temperature should they be kept? J. BECK, *Egmondville.*

SPRAYER.—*Sir*,—What kind is best, and where made, and probable cost?

THOS. LAWLOR, *Whitby.*

FERTILIZER.—*Sir*,—What is best kind of fertilizer to use in a young orchard of pear and plum trees? T. L., *Whitby.*

SEEDING AN ORCHARD.—*Sir*,—What is best mixture to seed down an orchard? It is sandy land, with slope to west. It was broken up and last year seeded with buckwheat.

H. M. McD.

CONSULTATION WITH EXPORTERS.—A Committee from our Association, consisting of Mr. M. Pettit, of Winona, and Mr. A. H. Pettit, of Grimsby, met at Toronto on the 13th inst., with the Committee representing the Apple Exporter's Association mentioned above. Three points were especially debated upon, viz., the inspection of apples according to the legalized grades, the basis of a contract between buyers and growers, and the varieties most suitable for export. The views of the exporters on this last point is well set forth above, the contract between buyers and shippers is probably wise if it can be made equally protective for the apple grower as for the apple buyer, but the inspection and grading is evidently too much in the interests of the growers, because if this practice were adopted, they could sell direct to English dealers on contract based on the established grades, without middlemen.

THE

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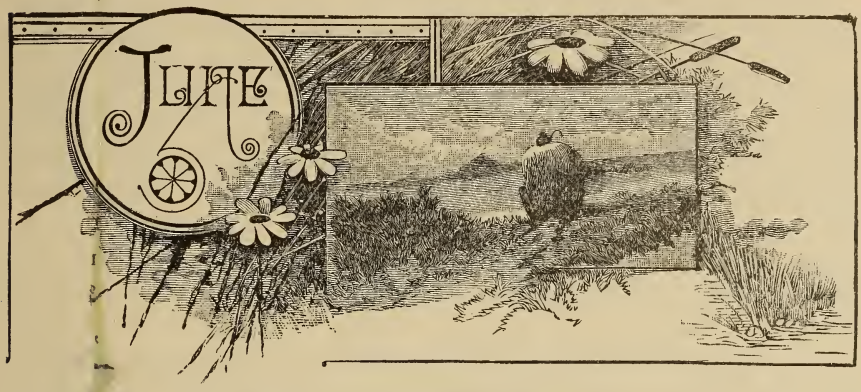


THE AGAWAM GRAPE.

OR the dessert dish, nothing is more attractive than a collection of grapes, assorted according to color, and on this account care should be taken in planting to include about an equal quantity of red, white and black varieties. It does not matter whether for home use or for shipping, for the buyers in the large towns also have eyes for the beautiful, and will buy such packages as contain assorted colors sooner than such as have all one color.

Of red varieties, the following list was approved of by the New Jersey Horticultural Society in 1884, in order of excellence: Brighton, Agawam, Delaware, Salem, Catawba, Jefferson and Lindley. Of these, the Brighton is a general favorite, but of too thin a skin to endure a long shipment. In our opinion, the Brighton a delicious grape. The Delaware is tender and sweet; it is usually esteemed to possess the highest quality of any grape, and truly its delicate little berries of diminutive size seem just suited to place before royalty itself. At Chicago, the Delaware was sold in small five-pound baskets, and in three-pound pasteboard boxes, and was in great demand; while, later in the season, the Catawba took the precedency, owing to its keeping qualities; a grape which does not ripen well at the north, except in favored localities.

The Agawam is a seedling grape, raised by E. S. Rogers, of Salem, Mass. The vine is vigorous and productive, but in wet seasons it is liable to mildew, though not as badly as No. 22 (Salem); the bunch is variable in size and shape; berries large, roundish, dark red or maroon; flesh tender, juicy, sweet, with a native musky aroma. This is considered by many one of the best of Rogers'

seedlings, but in Canada we give greater preference to the Lindley for market purposes, as being earlier and more productive, and of a brighter shade of red.

The experience of fruit growers in various parts of the Province concerning this grape is shown by the following extracts from letters just to hand :

Mr. E. Morden, Niagara Falls South, writes, "The Agawam is a very large red grape, of quality inferior to the Salem, but not quite as liable to mildew.

Thomas Beall, Lindsay, writes, "The Agawam grape is profitably grown here, principally because of its excellent keeping qualities and its fine flavor. We do not place it on the market until November, or in December, when the cheaper varieties are gone. A good price is then obtained for them. The best results seem to be obtained when grown near some variety producing more pollen.

Mr. A. M. Smith, St. Catharines, writes, "The Agawam has been very subject to mildew with me, otherwise I consider it as good as any of Rogers' red grapes."

Mr. Alexander McNeill, of Windsor writes, "The large berry and thick skin of the Agawam make it an excellent keeper and shipper. The vine is vigorous and usually healthy, but the fruit is subject to rot. This, together with its loose and usually small bunch, render it unprofitable at even three times the price of the Concord. Those who want a fairly good grape in December or January, and will spray carefully, will find the Agawam worth planting."

Mr. John Craig, of Ottawa, writes, "The vine is a strong, free grower, inclined to mildew; bears profusely; bunch and berry large; color, dark crimson; very rich; juicy; of first quality; skin, thick; keeps well without losing its flavor. In this section it does not ripen to perfection every season. Recently it has been shown that the Agawam is one of those varieties which does not perfectly fertilize itself, and, therefore, needs to have some strong bloomer, like the Concord, growing with it to produce the best results."

Mr. M. Pettit, of the Winona Experimental Station, writes, "The Agawam, on heavy soil, with the free use of sulphur, is the most satisfactory grape I grow. It is a regular and heavy bearer, a good shipper, a good keeper, and in good demand in the market.

Removing Apple Tree Suckers.—In neglected orchards suckers spring up around the trunk of the trees just below or at the surface of the ground. At times they are cut off with an ax or knife, but this is not permanent, as it leaves a little stump from which a new supply is sent forth the following year. The better way is when the trees are in full leaf to grasp each sprout separately, bend it over to an angle of forty-five degrees from the tree and pull it loose from the trunk. This operation is greatly aided by pressing the boot between the tree and sprout. When thus removed they are not liable to sprout again. If they should, the growth will be feeble and easily removed the first year.

OUR OUT-DOOR GRAPES AND THEIR DEVELOPMENT FROM THE NATIVE SPECIES OF NORTH AMERICA.

AS far as limits will permit, it will be our purpose to take a retrospective course along the pathway of the development of the Grape, from the period of the discovery of this continent, to the present day. The first colonist of North America found wild grapes in profusion and distinguished the species as the Fox and Frost grape. As early as 1564 wine was made of them. An early writer on the subject tells us, the Rev. F. Higginson of the Massachusetts Colony wrote home in 1629, "Excellent vines are here up and down the woods, our Governor has already planted a vineyard with great hope of increase."

Grapes were found by the first settlers of Canada along the St. Lawrence as far north as the Isle of Orleans, and we conclude that they were in abundance from the fact of its being called by Jacques Cartier "Isle de Bacchus." Indeed from early accounts our ancestors showed equally as much enthusiasm over the grapes found indigenous to the country, as that evinced by us in this last half of our century over the descendents of the same given us by nature and art.

The late Prof. Asa Gray arranges the genus Vitis of North America into four divisions, viz.: Vitis Labrusca, or Fox grape; Vitis cordifolia, or Frost grape; Vitis vulpina, Muscadine, or Southern Fox grape; and Vitis aestivalis, or Summer grape. The great array of varieties now in cultivation are the result of either spontaneous or of artificial hybridizing.

Except in California and Mexico attempts on this continent to introduce the European species of grapes have ultimately proved failures. While one of our native species, from the resistant power of its roots to the Phylloxera, has given the European vineyardist valuable stock for grafting upon, that have saved their vineyards from total destruction.

To the Vitis Labrusca of Linnæus we owe the greater number of our present varieties. Its native home is east of the Alleghany Mountains, from South Carolina extending north to Canada. It adapts itself to varied soils and conditions, attaining the greatest size in the granitic soil of New England. From the class known as the Northern Labrusca our most valuable hybrids have been obtained.

The persistence of this type is so marked that where its existence as forming one of the parents of an hybrid has been in doubt, the question has been determined by planting the seeds and the reversion of some of the seedlings settled the point.

The first variety of this species that obtained wide celebrity was introduced by Mr. R. Prince of Flushing, Long Island, about 1820. He obtained it from Mrs. Isabella Gibbs, who discovered it growing wild in North Carolina in 1816

and brought it north. Prince propagated it and called it the Isabella, and ten years later he published a treatise on the Grape. It is cultivated now to a very limited extent, and is found too late for high latitudes.

The Isabella has played its part in rearing a numerous family of children, but they being of the Southern type of the Labrusca, but a few are in favor North.

One of them, the Adirondac, was introduced in 1852, though of surpassing excellence, did well for a few years in favorable localities, but from inherent defects was generally discarded, even in its native home on Lake Champlain. The Catawba, a native of North Carolina, was brought to notice by Major John Adlum, of Georgetown, D.C., who published the first American work on Grapes in 1825, under the quaint title of "A Memoir on the cultivation of the Grape." In it he claimed that in introducing the Catawba he conferred a greater benefit upon the American nation than he would have done by paying off the national debt. In a very short time the Catawba was extensively cultivated along the Ohio River, and Nicholas Longsworth, of Cincinnati, manufactured large quantities of wine of it. From disease overtaking the vine, the extensive vineyards of Southern Ohio were destroyed, but in the lake region of Central New York it found a more congenial home and is now flourishing, supplying our markets in winter with a grape having few equals as a long keeper. The Diana, a seedling of Catawba, was introduced to public notice in 1843 by Mrs. Diana Castore, of Boston, Mass., and was quite popular for a while; though not as productive as its parent, it is considered by some to be better and is still in favor south, but mainly for its keeping qualities.

In 1849, Ephraim W. Bull, of Concord, Mass., announced the discovery of the widely famous Concord. After it had captured public favour he was asked how he obtained it and his reply was—"I was looking about for the best grape which met the necessary conditions of hardiness, vigorous growth, size of berry, early ripening, and, with these conditions, as good flavor as the wild grape affords. At the foot of a hill on a woodland path leading to the river, there I found an accidental seedling in 1843. It was very full of fruit, handsome and sweet, and the whole crop had fallen to the ground before August was out. Here was my opportunity. I planted the grapes at once and got many vines, most of them harsh and wild, but one of them bore a single bunch which I found ripe on the 10th September, 1849, six years from sowing the seed. This was the Concord."

Mr. Bull continued his efforts, and succeeded in establishing a strain of seedlings giving new grapes to the country every year. Its progeny could be numbered by the hundred, but for our present purpose only those tested here will be given, namely : varieties the result of natural variation or other parent uncertain, Moore's Early, Worden, Lady, Martha, Eva, Pocklington, Norwood, Cottage, Eaton, Rockland Favorite, and the numerous Concord seedlings of the late T. B. Miner, of New Jersey.

Varieties definitely known to be crossed with Delaware are, Duchess, Nec-

tar, and most of the late John Burr's seedlings. With Iona are Jefferson and Highland. Allen's hybrid crosses are El Dorado and Lady Washington. Niagara is claimed to be crossed with Cassady. Woodruff's Red by Catawba, Brighton by Diana, Hamburg.

The foreign crosses are also numerous but successful only in the South.

In 1850 Hartford Prolific was introduced by Steele of Hartford, Conn., meeting with favor, being the earliest variety then known, but the defect of dropping its berry when ripe detracted from its value as a market grape. It is still in favor North. The most prominent Labruscas enumerated as being discovered in the first half of this century were natural seedlings or, as called by some, "Spontaneous Hybrids." Now we shall enter the era of Artificial Hybridization. By this process the first successful products were given to the world in 1856 by Edward S. Rogers, at Salem, Mass. The direction of his efforts were in impregnating the Mammoth Labrusca of New England with varieties of the species Vitis Vinifera of Europe. As a result he retained and designated, by number, over fifty new varieties. In time several of these became the leading grapes of commerce, viz: Massasoit, Lindley, Herbert, Barry, Aminia, and Salem, the special merits of which may perpetuate his name in connection therewith for many generations. The success attending Rogers' efforts gave a surprising impetus to attempts in this direction by others. Unfortunately for Rogers his zeal was not proportionate to his means, and his valuable hybrids, which in our time would have assured him a fortune, left him comparatively a poor man.

Dr. Stephen W. Underhill, of Croton Point, on the Hudson, an enthusiast in this field, at an early day brought out several varieties by Labrusca crossings. Those tested in Canada were Irving, Senasqua, and Black Eagle, and a Delaware cross called Croton. Further south these have stood the test of time.

The late Peter C. Dempsey, of Trenton, Ont., followed the same path, and produced Burnett, by Black Hamburg crossing. J. H. Ricketts, and the late A. J. Caywood, both on the Hudson, originated varieties of value by crossing with the Labrusca. Rickett's crossings, mostly on the Riparia species, now number several hundred, though comparatively few have attained prominence. The popular varieties, Delaware, Creveling, Taylor, as well as some of Rommel's productions, are claimed by some authorities as partaking of Labrusca blood.

To conclude, this type of grapes, Cottage, Telegraph, Belvidere, Woodruff Red, Jessica, Wyoming Red, and Champion, have in recent years given us varieties prominent for early ripening, especially the Champion, which is much valued north, and still holds the palm as an extra early and profitable grape. These latter are spontaneous productions or variations of the original type by which nature, in her origin of species, has been so bountiful to mankind in the present century.

We will now have to consider briefly the Vitis Cordifolia of our native species, known as the Frost grape, or rather its subdivision named by Michaux, Vitis Riparia. This species is not only distributed well to the north, along the

banks and islands of our Canadian rivers, but its geographical boundaries extend south and west over a great part of this continent. Nature, in this species, has supplied us with wine as well as an edible grape, readily propagated by cuttings. Dr. Despetis, in his study of the Riparia, has noted over 300 sub-varieties, of which the Clinton is the most prominent. The Taylor, as before noted, thought to be an accidental cross with Labrusca, has given the south valuable wine grapes in Elvira, Noah, Missouri Reisling, Grein's Golden, and Rommel's Hybrids, viz.: Amber, Pearl, Transparent, Faith, July, and others. While Ricketts of Newburg, N.Y., with Clinton, produced Bacchus, Empire State, Naomi, Peabody, Pizarro, Quassaick, Secretary, and Waverly, six of these have been tested in Clarenceville and all but Bacchus discarded. Three of these flourished for a few years and then gradually dwindled out. Peabody and Waverly were exquisite in quality. Perhaps if their foliage had been sprayed by mixtures now in use other results might have been obtained. The Clinton, crosses of Arnold of Paris, Ont., have fared the same here. If some of the finest children of the Riparia species are to be saved we must interpose with spraying mixtures.

In conclusion a brief tribute is due to prominent propagators, whom with those already named, have contributed valuable varieties to our Northern Grape list. The Hon. Geo. W. Campbell, of Ohio, in introduction of "Lady" has given us the most valuable extra early white variety, and will soon introduce an extra early black, to be known as "Campbell's Early." Few men have taken more interest in popularizing grape culture.

Samuel Miller, of Missouri, discoverer of Martha, still a popular white, can look back over a useful life's work in this and other branches of fruit culture. John B. Moore, of Concord, Mass, will be remembered in connection with Moore's Early: Jacob Moore, of Brighton, N.J., with Brighton and Moore's Diamond: Jacob Rommel, of Missouri, with Rommel's Early Black. These names, with those of Bull, Rogers, Caywood, Burr, Ricketts, Dempsey, Prince, and Underhill, veterans who have mostly passed away, will survive in connection with their creations for many generations.

WM. MEAD PATTISON.

Clarenceville, Que.

For Potato Blight and the Macrosporium disease, apply the Bordeaux mixture, beginning when the plants are about six inches high, and continuing at intervals of twelve or fourteen days, until five or six applications in all have been made. If the season is rainy it would probably be best to make the treatments every ten days, the object being to *keep the plants at all times covered with the fungicide.* By adding four ounces of Paris green to each barrel of the Bordeaux mixture the treatments will not only prevent the diseases under consideration, but keep in check the Colorado potato beetle and other insects as well. Before adding the Paris green to the Bordeaux mixture the former should be made into a thin paste by mixing with a small quantity of water.—U. S Farmers' Bulletin 15.

GRAPES, OLD AND NEW.

THE following is a portion of the address given by Mr. G. W. Campbell, of Ohio, at the recent meeting of Fruit Growers at Rochester. He said:—Fifty years ago the Catawba and the Isabella were the only grapes. The grape-growing centres were not known, and hardly a single vine was growing where now thousands of acres are to be seen. The Delaware grape was discovered and tested at Delaware, Ohio, about the year 1850. The discovery of this grape was a revelation to lovers of fine fruit, and its introduction stimulated grape-growing to a considerable extent. The Concord was first exhibited in 1853; it was slow in coming to the front, but it has held the highest position for more than thirty years. A large number of seedlings have been produced from the Concord, of which the Worden is probably the best. Moore's Early stands second to Worden. It is growing in favor, and increased plantings of this variety are made every year. Eaton is another Concord seedling attracting attention: it is one of the largest of the black grapes, and is extensively grown for the market around Boston. Lady and Pocklington are white seedlings of the Concord. The Pocklington was first shown in Rochester in 1877. Two white seedlings of the Concord grown in Ohio are very good, and seem likely to come into general notice. One is the Witt, originating at Columbus in 1880, and first shown at the meeting of the Ohio Horticultural Society at Columbus in September, 1885; the other, Colerain, is slightly earlier than the Witt, and originated in Colerain, Ohio. Woodruff is the only red Concord seedling of any value. It originated about twelve years ago in Michigan. It is becoming more popular year by year, and although not as good as the Delaware, its large size and showy appearance make it a dangerous rival of that variety as it is in the market at the same time. Brighton is another popular red variety; it has large showy clusters, and presents a fine appearance. It is not entirely hardy, and in wet seasons is liable to have straggling bunches from imperfect pollination. Moore's Diamond is a white grape of recent introduction, of good quality and fine appearance; it is, however, not productive at Delaware, Ohio. It is not very hardy, and rots in some seasons. In some places, however, it is a popular market grape. Empire State, another white grape, is not fulfilling the hopes of its introducer. It is unproductive, and the vine is not very healthy. The Ulster Prolific, a red grape, thought to be a cross between Delaware and Walter, originated in Ulster County, New York; $4,000 was paid Mr. Caywood for the original stock of this grape. The Ulster was first shown in 1883; it is of medium season, is a good producer and of fine flavor. The Nectar, a black grape, another seedling by Caywood, promises well. Vergennes was first exhibited in 1880. It originated in Vergennes, Vermont: is one of the best of all grapes for long-keeping, but it is not of high quality; it is a red grape of large size and handsome appear-

ance. The Green Mountain is a new, early, white grape of fine quality and a good producer; it is one of the most promising of the white grapes of recent introduction. The Mills grape is another new introduction; it is black and showy, but not healthy, and I have never been able to produce a single perfect bunch.

Fertilizers for Grapes.—*Previous crops.*—In planting a new vineyard, we can select rough land, full of roots, etc., providing that by stirring the soil the roots have well decayed. Land can have been planted one year to clover, lucerne, sainfoin, and the like, or even with hoed crops.

Fertilizer.—90-180-260 lbs. Super-phosphate, or 180-350-530 lbs. Thomas Slag or Bone meal, or for heavy soils, 90-180-350 lbs. high-grade Sulphate of Potash, or 80 per cent. Muriate, 180 350-530 lbs. Chili Saltpetre, 130-260 400 lbs. Sulphate of Ammonia.

Additional suggestions.—An application of 18 tons of stable manure is not sufficient to supply the plant food for an acre of vineyard for 4 years. Dr. Barth, who has experimented considerably in this direction at the Alsace-Lorraine Experiment Station at Rufach, has recommended an additional application of commercial fertilizers. His rules are to manure with stable manure once in 5 years, with phosphoric acid and potash once in two years, and with the necessary amount of nitrogen in the spring of each year.

Where stable manure or muck is not to be had, except at a high price, one can get along with fertilizers alone, and can keep the soil in good mechanical condition by planting green crops, or making and applying a compost. One can prepare a compost, that will last for 3 years, by taking 3-5 tons of fairly well dried muck, and mixing with it 450-900 lbs. lime and one of the two mixtures of artificial fertilizers recommended above.—B. 55 Geneva Experimental Station.

Nitrogen and Nitrogen-Gatherers.—A few words in regard to nitrogen in fertilizers will not be out of place. This is the most costly constituent of commercial fertilizers; and, in many instances, the increased cost of the fertilizer will balance or even exceed the increase in the proceeds from the crop, due to the nitrogen. Fortunately, we are not obliged to rely entirely upon commercial fertilizers for our supply of nitrogen to enrich our soils. Recent investigations have proved that the class of plants called "leguminous plants," to which the clovers, peas, beans, etc., belong, have the power of deriving from the air a part of the nitrogen required in their growth. For this reason they are sometimes called "nitrogen-gatherers." This fact helps to explain why clover is so valuable in restoring and enriching poor soils. If we fertilize our crop of clover liberally with potash and moderately with phosphates we have there the means of enriching our soil in all these "essential ingredients" of fertilizers. This is a very important principle in the use of fertilizers, and is in accordance with long established practice.—Bulletin No. 46, Ky. Ex. Station.

CAUSE OF UNFRUITFULNESS OF SOME PEAR TREES.

Attention was called last year to the fact that some varieties of both pear and apple, when planted alone in large number, thus forming a solid block of the one variety, were under such conditions unfruitful. See CANADIAN HORTICULTURIST, Vol. XVI. page 236. Mr. M. B. Waite has been continuing his experiments, and has published in Bulletin No. 5, of the Division of Vegetable Pathology, U. S. Department of Agriculture, a full account of the results obtained. From this we learn that the following varieties are self-sterile, viz. :—Anjou, Bartlett, Boussock, Clairgeau, Clapp's Favorite, Columbia, De la Chêne, Doyenne Sieulle, Easter Beurre, Gansel's Bergamot, Gray Doyenne, Howell, Jones, Lawrence, Louise Bonne, Mount Vernon, Pound, Sheldon, Souvenir du Congress, Superfin, Wilder (Colonel), Winter Nelis.

And that the following are self-fertile, viz. :—Angouleme, Bosec, Brockworth, Buffam, Diel, Doyenne d'Alençon, Flemish Beauty, Heathcote, Kieffer, Le Conte, Manning's Elizabeth, Seckel, Tyson, White Doyenne.

We further learn that the pollen of self-sterile varieties may be quite capable of fertilizing another variety ; for example, pollen of Anjou though incapable of fertilizing Anjou flowers (not only those of its own tree, but also those of any other Anjou tree), is quite capable of fertilizing the flowers of Bartlett, or of any other variety of pear ; and so of all others of the self-sterile sorts. Also that the seeds of self-fertile varieties when fecundated only by their own pollen are usually abortive, and that the fruits differ in size and shape, and sometimes in flavor and time of ripening from those produced by cross-fertilization.

Mr. Waite therefore advises to avoid planting solid blocks of one variety, and where such already exist and have proved unfruitful, to graft among them sufficient trees with some other variety to supply the needed pollen. Also to have a good supply of bees in the neighborhood to help cross-fertilization.

Toronto, Ont. D. W. BEADLE.

The Consumption of Fruit by my customers is double what it was when they bought from the store. I hire a boy at 75c. a day to deliver my berries daily. When I first started in peddling, one family would not buy any berries. The gentleman always said, "We do not like berries." I could not understand why, and resolved to test them. I stopped one afternoon and handed him a box of berries, saying, "I wish you would have these served for supper and give me your opinion of them. They are said to be superior by some and I am anxious to get an opinion from one who is not fond of fruit." The next trip the whole family was at the gate waiting for me. You would not mistrust that the variety was Crescent if you had heard the praise. They did not know before what a dead ripe, fresh berry really was. From that little venture I sold them that season four bushels of berries for table use.—Farm and Home.

COLD STORAGE FOR APPLES.

SIR,—I have been unable to find an architect who knows anything of the construction of cold storage buildings. Could you describe or give a section of wall of storage building, how constructed of wood, how many times boarded and papered, if filled and what with, is any ventilation or circulating medium used? How is ice chamber constructed? Can two story building be cooled with one ice chamber, if so, how is cold air brought to lower flat? Would it be advisable to put lower story partly in ground? Would any windows be required? If you cannot give the above information, could you advise where I could get it?

D. R. MENZIES, *Goderich.*

In January number of volume XVI, full directions for a first-class cold storage house were given with illustrations, to which we refer our enquirer for replies to most of his enquiries. This subject has been treated several times in this Journal.

A simple hillside fruit cellar was illustrated on p. 251, Vol. X, from "Jour. of Chemistry" (Fig. 661). Two rooms, large enough to contain all the fruits of the farm, are needed—an outer and an inner. A cellar should be dug in the south side of a hill large enough for the inner room. The outer room should be exposed to the air wholly in front, and on the sides far enough to accommodate two windows, as shown in the engraving. Build of brick or stone, carrying the walls to the height of eight feet. If stone is used—it may be rough and be put up by any farmer—it must be pointed with mortar. A thick wall, with a door, should separate the two rooms. In the engraving the walls are shown by dotted lines. The roof should come near the ground in the rear; be carefully constructed and supported by timbers; be lined with tarred paper, strongly secured and painted with tar or pitch. There should be a ceiling—rough boards will do—and a space one and a half or two feet deep between it and the roof, to be filled with dry straw, hay or sawdust.

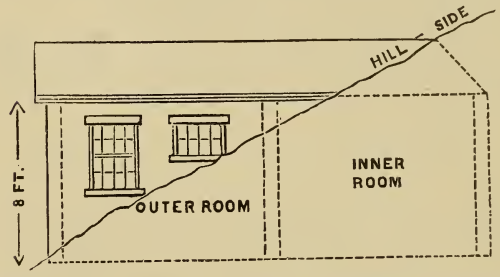


FIG. 661.—DR. NICHOLS' HILL-SIDE FRUIT CELLAR.

The fruit should be kept in the outer room until freezing weather, and then be removed to the well protected inner one. The outer room should be ventilated through its windows; the inner, by opening both doors, *but only in cold, dry weather*, as warm air introduced would condense and give out moisture. There must be special care about admitting warm air in the spring.

For ice storage, the California Fruit Grower describes the following, as an inexpensive house. The room itself may be any size most convenient. Erect a frame lined on the inside with heavy paper and varnished with shellac, then ceiled and floored with matched stuff, 5/8 or 3/4 inch thick. Varnish the entire

inner surface. Before putting down the paper lining and floor, fill in between the framing dry sawdust and pulverized charcoal mixed. Board up the outside with tightly-matched boards, filling in as you board up with the sawdust and charcoal, as well as the top. The door for entrance to the room must be made to shut against broad jams and angular closures like an iron safe, so that it cannot stick by swelling. It should be made by framing and packing with sawdust and charcoal, in the same manner as the room, which should be between the walls from 12 to 15 inches.

In the ceiling of the cold room, frame an opening large enough to let in a galvanized sheet iron box of sufficient size to hold as much ice as you may wish to store, or about one-tenth of the capacity of the whole room. The ice chamber should be fitted into the opening tight, with a flange all around top. It may be No. 18 or 20 galvanized sheet iron. To the bottom attach a coil of galvanized iron or lead pipe, running two or three times around the room, hanging on hooks or brackets, just the level of the ice box. Pass the end of the coil through to the outside of the room and terminate in an inverted siphon, so as to retain the water within the coil up to a level just below the bottom of the ice box. This is for the purpose of economizing the cold from the waste water by circulating it around the room. From the cross beams of the ceiling, as bearing for the weight of the ice, place two or three straps of square iron, of a size sufficient for carrying the weight of the ice you intend to put in. Let them hang upon the inside of the galvanized iron box to within an inch of the bottom. Upon these straps lay a hardwood grating. Make a galvanized iron cover to fit tightly upon the ice chamber, and a wooden one to close over the iron one.

To prevent the water that may be condensed upon the outside of the ice chamber from dripping down upon the goods, make the bottom of the ice chamber bulge a little downward, so that the condensed drops will run to the center, or one side, where a small pan may be hung with a small pipe leading to the outside of the cold room, and a siphon attached to prevent ingress of air. The ice chamber may now be charged to its full capacity with ice, and if a very cold room is required, sprinkle a layer of salt between each layer. This, however, is seldom done. The principle upon which the cold room is constructed is that there shall be no communication between the ice with its moist vapor and the air of the cold room. Any moisture made by the cooling of the air, which is precipitated upon the iron surface of the ice chamber, is at once conveyed out of the room by the drip pan and its pipe. Hence there is no need of any special ventilation, more than what will naturally occur by the use of the door and the small leakage through its closing crevices.

The ice chamber requires no ventilation, hence economizing the ice to the best advantage, while the water from the melting ice is turned to the best account by circulating around the room in the waste pipe.

The best temperature for fruit is about 34 degrees, or any temperature below 40 degrees and above freezing, where this kind of stock is often changing by sale. If stock is to lie for a considerable time, 34 degrees should be obtained if possible.

HOW THE APPLE TREE GROWS.—I.

THE "Life History of an Apple Tree," was the subject of a very interesting address recently given before the Fruit Growers' Association of N. S. by Prof. Wm. Saunders. He first showed its development from the seed, viewed from the standpoint of a botanist. He spoke of the soil and its ingredients, and its capability of holding in reserve the elements of fertility required by the apple tree. The soils of Canada had been proved, upon careful analysis at the Central Experimental Farm, to be as rich in fertility as the best soils of Europe. Trees take a large part of their nourishment from the air, seizing upon the carbon dioxide exhaled by animals and converting it into woody tissue, and starchy and carbonaceous matter. The ash remaining from the burning of 100 lbs. of wood is usually less than two per cent. These ashes, said the Professor, are said to contain about 3½ of potash, and about 3¼ of phosphoric acid, and a much larger proportion of lime. This is according to the analysis of Erdiann in Germany, and on this basis an apple tree would take from the soil for the production of 100 lbs. weight of wood, estimating the ash at two per cent., less than one ounce each of potash and phosphoric acid, and probably not more than three or four ounces of nitrogen. This is all of the important fertilizing constituents of the soil which the tree takes up for the production of 100 lbs. weight of its woody frame, during the whole period of the growth required to produce that weight.

Let us next consider the constituent parts of the leaves, which, however, are eventually all returned to the soil by their fall and gradual decay. The leaves of several varieties of apples have been analysed by the chemist of the Experimental Farms at different stages in their growth, with the following results: Gathered on the 25th of May, when they were not fully expanded, each 100 lbs., contained on an average about ¾ of a pound of nitrogen (.742), a fraction less than ¼ of a lb. of phosphoric acid (.248), and a fraction over a ¼ lb. of potash (.252).

The mature leaves collected on the 20th of September were found to contain, when compared with the newly-expanded leaves, larger percentages of nitrogen and potash, and a smaller proportion of phosphoric acid. The nitrogen was present in the proportion of .867, nearly 9-10ths of one per cent.; phosphoric acid .104, or nearly 1-5th of a lb. in 100 lbs.; and the potash .392, or nearly 4-10ths of a lb. in each 100 lbs. of the leaves.

If we examine the fruit of the apple, we find it to consist mainly of juice,

and when this is expressed we have a residue which cider makers call pomace, composed mainly of the compressed cellular structure of the fruit with the cores and seeds, and a small remaining proportion of juice and flavoring material. The proportion of juice in apples will average about 80 per cent., although it is not possible in cider-making to recover the whole of this. The juice contains varying proportions of malic acid, which is the acid principally in apples. Sweet apples sometimes contain less than ¼ per cent. of this acid, while the sour varieties contain from 1 to 1¼ per cent. The Baldwin apple has been found to contain about 1 per cent. when tested in October, and the Rhode Island Greening at the same time about 1¼ per cent. As the ripening process goes on, the proportion of acid diminishes, while the sugar increases, and Rhode Island Greenings analyzed in December have given less than 1 per cent. of this acid. The proportion of sugar varies in different varieties and at different periods of ripeness from 6 to about 12 per cent. Beyond these ingredients, the juice consists of water with a little flavoring material. Everything in the juice, excepting the water, is compounded by the plant from the gases taken from the atmosphere, and hence there is no drain on the soil in the formation of this material.

In the pomace will be found the cores and seeds, with the skin and the compressed cellular structure of the fruit. The seeds are especially rich in nitrogen, and their formation and maturing is a considerable tax on the vital forces of the tree. For this reason heavy crops exhaust the tree very much less if the fruit be thinned. In apple growing this practice is in every sense economical, for when a heavily-laden tree is thinned the fruit produced is much improved in size and quality, and hence commands a higher price, while the vigor of the tree is less impaired, and its productive capacity for the future economized and increased.

Apple pomace is found to contain, as it comes from the cider press, in every 100 lbs., as shown by the analysis of Dr. Goessman, of Amherst, Mass., about 4½ ounces of nitrogen, about 2 ounces of potash, and less than ⅓ of an ounce of phosphoric acid.

The question is often asked as to the food value of apples for stock. Much will necessarily depend on the condition of ripeness of the fruit, also on the variety of the apple from which the supply is to be furnished. European authorities consider the money value of fodder constituents in ordinary varieties of apples and pears as somewhat higher than those contained in an equal weight of turnips, and those of the apple pomace as about ⅓ higher in feeding value than the whole apple, which has served for its production, and about equal in value to sugar beets.

Where apples are fed to stock they should be given in moderate quantities, and should be liberally supplemented with more nutritious and more highly nitrogenous food, such as bran, shorts or oil cake, with a fair proportion of hay.

We reserve for another issue that portion of Prof. Saunders' address relating to manures for the apple orchard.

CONVENIENCES FOR THE ORCHARD.

Wheelbarrow Truck. — The wheelbarrow is one of the indispensable things in the garden almost the whole year around, but when heavily loaded it is very straining on the muscles, the operator having to lift a good share of the load, besides pushing and balancing it. Its transformation into a simple truck, as herewith illustrated, will make it much easier to handle, and better than a two-wheeled cart, as the front wheel prevents the body from tipping over when the load is in the front end. It works like a baggage truck used in all railroad depots. The iron axle is about two inches square, and long enough to allow about two inches play between wheels and body of barrow frame and axle. The truck wheels should be about ten inches higher than barrow wheel, or high enough to suit the operator, and to carry the front wheel a few inches above the ground when turning by lowering the handles.

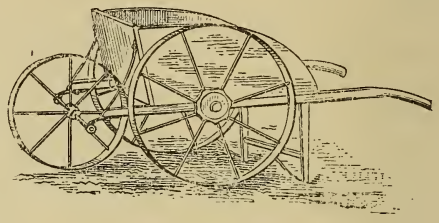


FIG. 662.

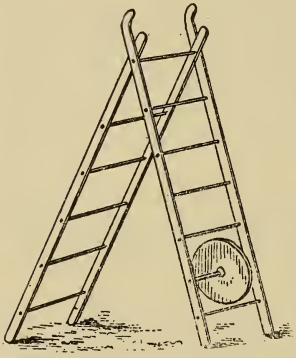


FIG. 663.—COMBINATION BARROW-LADDER.

Orchard Ladders. — A reasonable number of ladders are a necessity for large orchards, and they should be of all kinds and sizes. Always let the ladder fit the tree, a large ladder for a large tree and a small ladder for a small tree. The home grower, having a limited number of fruit trees, can get along with an ordinary step-ladder and an ordinary extension ladder. We use a ladder consisting of four sections, easily separated from one another, and easily fitted together into a single large ladder, or two medium-sized ones. They can also be used as step-ladders. The disadvantage of these extension ladders is their weight. It takes an unusually strong person to handle a four section ladder, and considerable effort for a person of average strength to handle the three section ladder. My preference would be for having several light ladders of different sizes. The accompanying illustration shows a step-ladder that is easily transportable, and for this reason a great convenience. The ladder can be made of any length desired. It will come handy in grafting and pruning as well as in picking fruit. Baskets of fruit may be set into the spaces between the rounds and wheeled home, and empty baskets back to the orchard again.

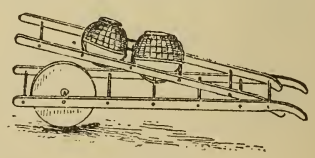


FIG. 664.

TRANSPLANTING ONIONS.

Mr. C. B. Waldron, of the North Dakota Experimental Station, says that his attempts to grow onions in the ordinary way have generally failed, but he has succeeded well by transplanting. For example, on April 4th, seeds of a number of varieties were sown in shallow boxes in the greenhouse. When the plants came up the average stand was about 500 to the square foot. May 23, these small onions, with a diameter slightly greater than that of an ordinary wheat straw, were transplanted to the open ground 5 inches apart in the drill. On the same date and on similar soil, seed of the same varieties were sown. The rainfall from above date until June 30 was 3.62 inches, for July 2.21, and for August 2.72.

The onions were harvested September 22. At this time all of those which had been transplanted were mature, while of the others only the early pickling sorts and the Extra Early Red had thoroughly ripened. Only 5 varieties out of 26 planted made a satisfactory stand from seed. The following table gives the relative yields from the two methods of culture :

Relative yields of onions transplanted and grown from seed.

VARIETY.	Weight of trans-planted.	Weight of non-trans-planted.
Early Red	71	14½
Red Victoria	53	7
White Victoria	56½	11
Silver White Ætna	65	13
Yellow Globe Danvers	47	12

The author estimates that about 84 square feet of glass are necessary to furnish plants sufficient for 1 acre, and that the cost of transplanting an acre is about $10.

When the saving of seed is taken into account, it is doubtful if the expense of growing a crop in the old way is less than by the method of transplanting. Transplanting onions produced large, regular, mature bulbs, greatly excelling the others in keeping and market qualities.

FIG. 665.

A Vine Holder.—At the last meeting of the New York Horticultural Society, samples of the vine holder here illustrated were shown. They came from the Rochester Radiator Co. (Rochester, N. Y.), and cost $1.00 per 1,000. We consider them a great labor and time saver. Surely this year it has not taken us one-quarter the time to fasten our vines to the wires as was required for this work in former years. —American Gardening.

GROWING SMALL FRUITS.

IN regard to the profit of small fruit growing. Where I am located, I have unusual facilities for railroad shipments; three prominent roads cross the farm, with a station very convenient. I can ship in any direction, morning or evening. I have already known the market to be overstocked with first-class fruit, and I need not refer to special or general prices to show that the business, economically conducted, gives a fair return for amount invested and labor bestowed. Under the system pursued, the soil does not deteriorate, as with grain raising.

Without special care my blackberries have borne their usual crops for fifteen years. Raspberries should be renewed once in eight or ten years. Currants and grapes, it is well known, though needing care every year, stand for many years, and strawberries do best when new beds are planted yearly, and, though a good paying crop when they do well, are not as sure as the other fruits. But, taken together, failure does not as often occur in fruit raising as in grain raising, and I need not mention the results of failure in a grain crop—failure is to well known. But in comparison with the expense of high-priced labor, tools, etc., a diversified work will make the largest and most satisfactory return.

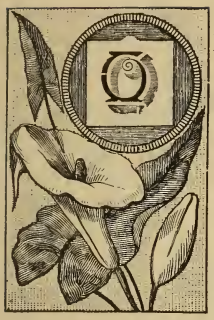
An itemized account of cost of production, of sales and returns of different products of the farm, is the only way to determine their relative profit. Probably, not one in fifty of average farmers can give any idea of the comparative value of different crops, when the total cost of production is to be included. I will try to illustrate by one example. One of my neighbors, with a farm of 200 acres, was impressed with the common opinion that all hand labor is a waste of time on the farm, and seemed to be satisfied with the work only when it was accomplished with the help of a team. He said: "I don't see how you can make it pay to putter around with strawberries and blackberries." Taking from my pocket a memorandum book and pencil, I said: "Let me show you some figures. There are ten acres of corn that yielded 1,000 bushels of ears, equivalent to 500 bushels shelled corn; without itemizing the cost, which most any one can do, the value of the crib is $125."

"Yes," said he, "that was a fine crop, which I should think would pay you better than all the berries you have, to say nothing of the value of the fodder." I then referred him to the account of a small strawberry bed of fifty-four rods (2-27). The proceeds were 660 boxes, barely a medium yield. The cost of the corn (as the labor was all hired) without counting interest on the value of land or taxes was 16c per bushel, $80; net, $45. The itemized cost of the berries ready for market was $26; net, $40. As for the character of the labor, one must choose for himself. I prefer to diversify the work.—Minneapolis Journal.

CANADA RED, ERRATA.—On page 162, for "three years," read thirty-three years; and for "Hudson, Ont.," read Hudson, Que.

HARVESTING THE CHERRY.

Necessary Tools—Ladders.



OF these the only convenient form is the common adjusting folder, which is easily manufactured by using for the sides two-inch pieces of common lumber, 6 inches wide and from 6 to 10 feet long, as occasion may require. Into these are grooved steps of same width, at easy stepping distances, fastened with nails or screws, each supported by cleats on the under side. The top should be constructed with a platform step, eight inches wide, on which to rest the picking boxes and for the picker to stand upon whenever necessary. This style is found at almost any store dealing in hardware or agricultural implements, and is generally used while the trees are young and low headed. As the trees become large and tall, the staging platform is far the best. This is constructed on the plan adopted by plasterers for the finishing of inside work in buildings, viz.: Two wooden horses are made of the required height for convenience of the pickers, and placed at safe distances apart along the sides or under the branches of the trees, and on their tops is constructed a platform, where one or more pickers may stand and do the work. These have the advantage of accommodating several persons at a time, are movable, and easily shifted from place to place.

Picking Crates.—These are made of light but strong material, and of necessary size to receive four common berry boxes side by side. This crate is suspended to the picker, adjusted to a convenient position in relation to the work and in front of him, thus relieving both of his hands to be used in picking.

Boxes and Crates.—The common style which is used for berries is well adapted to use in gathering a cherry crop.

In an orchard of any extent a small shanty or packing room should be provided. It will also be found convenient for storing the fruit against exposure, as well as shelter for the pickers from a sudden rainfall. In this may be constructed a facing and packing table.

Time to Gather.—If for shipping, the best time will be when wholly covered with a light-red color—approaching scarlet; if for a near market, then a dark-red color.

Picking.—Having everything ready, the picking force should be divided into two classes. The first proceeds to gather all the fruit within easy picking distance while standing on the ground, and should keep in advance of the second class, which works from ladders or staging, and cleans up the tree. Cherries must be picked by the stem, and not by taking hold of the fruit, and care must be taken not to even start the stem from the fruit, for if that occurs the juices will flow out, and all such fruit will quickly spoil. None but sound

and ripe specimens should be placed in the boxes, and the top layer in every box should be an honest index of the whole. With the "picking crate" swung to the picker, he has every facility for doing his work well, and quickly detecting any damaged or inferior fruit before it is picked. As soon as the boxes in the picking crate are filled, they are taken out and placed in a shipping crate, and others put in their place; and the crate, when full, carried to the facing table.

Facing and Packing.—The first consists in turning the stems of all fruit in the top layer down, which will give the appearance of a solid surface to the box. All boxes should be filled a little above their edges, to avoid the semblance of stinted measure, and provide for the inevitable settling sure to follow the racket of transportation. As fast as faced, pack them in the shipping crate, the best being the 24-box crate, close up securely, brand with name of variety, and name of grower and consignee, and send to destination at once. This fruit is never so attractive as at the time when taken from the tree, and the sooner it is placed in the market the more readily it will sell. The practice of facing, above described, is receiving severe criticisms in some prominent circles, as offering too great temptation to dishonest conduct.

Storage, for the Purpose of Holding.—The product can be safely held in a cold storage for several days, but must be quickly used when taken out; and especially is this an advantage to the grower in seasons when the yield is abundant, and the market overstocked.—Kansas Fruit Manual.

Fertilizing Constituents Found in Fruits.—The necessity of applying potash, phosphoric acid and nitrogen to our fruit crops, especially if land is at all worn, is shown by the following table prepared at the Amherst (Mass.) Agricultural College. Our readers will notice that potash is the element most largely drawn upon; the nitrogen varies, but phosphoric acid is pretty constant at one per cent.

	Phosphoric Acid.	Potassium Oxide.	Nitrogen.
Apples	1	2.7	2
Apples	1	1.9	1.3
Peaches	1	1.3	..
Pears	1	3 6	1.2
Strawberries	1	1.4	..
Strawberries	1	2.6	..
Strawberry vines	1	.7	..
Cherries	1	3.3	..
Plums	1	4.3	..
Currants, white	1	2.8	..
Currants, Red	1	2.1	..
Gooseberries	1	1.9	..

SOME POINTS IN STRAWBERRY GROWING AND HARVESTING.

Selecting Plants.

STRONG, vigorous one-year-old plants should always be used (older ones are not worth planting), and obtained of the nearest reliable grower. Their roots should be packed in some dampened material as fast as taken from the ground, and kept so until either "heeled in" or planted in the row. Plants shipped in are never as good as home-grown ones.

Planting.—A man with a spade, beginning at the end of a mark where the row is to be planted, places the middle of the spade on the mark and crossways of the row, thrusts it into the ground at an easy angle to a sufficient depth to receive the roots of the plant in a natural position, shoves the handle forward to an upright position, and at the same time another man grasping a plant well down onto the crown with the thumb and forefinger, places the same into the opening and under the spade sufficiently deep to have its crown a little under the ground when let back by lifting out the spade, and gently pressed down with the foot as the spader passes to the next place for a plant. Two men should in this way plant from 2,500 to 3,000 plants in a day. Care should be taken not to form too great a depression around plants, as heavy rains will wash in the dirt, covering the crown so deep that it will rot before the start gets above ground, unless the weather is quite warm.

Cultivation.—This work should be commenced shortly after the planting is finished, and continued constantly through the season until autumn frost occurs. At first run a cultivator between the rows, gauged so as to turn the ground to the plants, avoiding covering them, and the forming a trench which would retain rain-falls around the plants. Then follow with hoe to level down any ridges which may occur, and clear out all weeds. In some kinds of heavy clay soils it sometimes becomes necessary to run a one-horse turning plow with the bar side well up to the row, and in a few days work the dirt back to the row with a cultivator. As a strong plant growth is the one important end to be gained, it is folly to permit the newly set plants to develop blossoms and fruit the first year; therefore all such growths should be promptly pinched off as soon as they appear. All runners should be promptly removed until the plant becomes well established; then, if to be grown under the matted-row system, the runners should be turned into the space between the hills, and then into the space

between the rows. During the after season, in cultivating, fasten to the front of the cultivator a crossbar, on each end of which is attached a rolling coulter, gauged at such distance apart as will give the desired space for culture between the matted rows. This implement will remove all plants from the space. Matted rows have generally the preference to any other system of growing the strawberry, the main reason being that the prevalence of root-destroying insects will not be so disastrous as in the single-hill system.

Winter Protection.—Every plantation should have a protection during the winter months, and in a bearing season until the crop of fruit is gathered. Old prairie hay is the best, being freer from weed seeds and other foul matter than most any other substance. This should be placed on the rows in autumn or early winter, as the ground becomes frozen, to prevent injury occurring from heaving of the land by freezing, and the exposure of the roots to sun and wind; also during the fruiting season, to retain moisture.

Gathering and Marketing the Fruit.

Picking Stands.—These should be provided beforehand, and made a suitable size to hold six quart boxes, by using four corner posts 4 to 6 inches long and 1 to 1½ inches square. The sides, ends and bottom should be covered with common lath, cut into proper length, put on with fine shingle or common lath nails, leaving spaces between each of 1 to 2 inches wide, to the ends of which attach a bail or handle of some tough wood.

Boxes.—For large plantations, the material should be secured in autumn and made up during the winter. There are two styles, the "Leslie Oblong Octagon" and the "Halleck," which is square. Either should be yellow poplar wood. The first is the more generally used.

Crates.—The material for these should be procured early in the season, and made up. The size holding 24 boxes is most suitable for all purposes, and should be of yellow poplar wood.

Packing House.—Every plantation of half an acre or more should be provided with ample shelter and storage room for the fruit during the picking season. If simply for shelter from sun and winds, it may be constructed of common canvas cloth, stretched on a pole frame; but if for shelter from rains, then it should be constructed of lumber. In either structure, shelves should be provided within, on which to place the boxes when brought from the plantation before packed.

Picking.—For shipping, the fruit should be gathered as soon as fairly colored. For home market, where it will be used in a short time, it should be allowed to remain until fully ripened, to attain its highest excellence. For either purpose, care must be given to pick by the stem, a short portion of which should be left attached to the fruit. It is best not to touch the fruit in picking, as any loosening of the stem, or pressure causing the juices to flow, will prove an injury, and often spoil a large portion of the box. None but round and

well-formed berries of standard size should be placed in the boxes, either for a first or second class—the grading being made as to size only. Plantations should be carefully picked over each day, to prevent any fruit becoming over-ripe.

Packing.—Each box should be slightly overfull, and their tops faced by turning the stem end of the berry down, to give an attractive appearance to the whole, and placed in close-fitting crates, closed up, marked with name of variety and grower, and put on its route to its destination at once.

Marketing.—All soft classes of fruit should be hauled to market in spring wagons, and even then care should be given, in driving over rough roads, to avoid all shaking and jostling as much as possible. Gentle driving will pay.—Report Kansas Hort. Soc.

Commercial Fertilizers for Fruit Trees and Shrubs.—Fruit-trees need as much care and as good manuring as any cultivated crop. Fruit-trees especially give excellent returns for the manure given. When the trees are set out they should be well manured in order that they may get a good start. By well manuring and carefully caring for the orchard, we not only get fruit early, but in abundance. In the case of dwarf fruit-trees whose roots do not penetrate very deep, a liberal dressing is absolutely necessary to obtain a good quality of fruit. As it is often quite difficult to obtain stable manure, sewage, or the like, we can get along just as well, and in some cases perhaps better, by the rational application of artifical fertilizers, and in the cases of orchards, we need not trouble ourselves so much about the mechanical condition of the soil.

The following quantities are to be recommended:

	Superphosphate	Sulphate or Muriate of Potash	Chili-Saltpetre
For a high, large tree	3.3—5.5 lbs.	3.3—5.5 lbs.	2.2—4.4 lbs.
For a young or dwarf tree	0.7—1.5 lbs.	0.7—1.5 lbs.	0.5—1.0 lbs.

The phosphoric acid and potash should be applied in the late fall or early winter, and dug or plowed lightly in if possible. It can also be dissolved in water and applied. The Chili-Saltpetre can be spread beneath the trees in winter, or applied dissolved in water, in spring or summer. In order that we may obtain the best results from the manure, if the ground becomes too dry in summer, it should be watered. In large orchards and along roadsides, when this is not practicable, mulching could be practiced with advantage.—B 55 Geneva Experimental Station.

The Asparagus Beetle is an imported insect, feeding in both the larval and adult stages on asparagus. It appears to be slowly extending its area of attack to the west and south, and is establishing itself in Ohio. There are several generations in a year, the pest wintering in the adult or beetle state. Sowing lime over the asparagus beds in the morning, while the dew is on, and the application of pyrethrum to the plants while the insect is in the larval stage, are the best remedial measures.—Farm and Home.

A GARDEN MARKER.

The vegetable garden, and in fact all growing crops, should at all times be laid out with a system, convenient to the garden, in location favorable to each sort planted and so that the growing crops will be a pleasure to the eye. To partially accomplish such a result, a marker that will do the work rapidly is a great convenience. To a successful gardener, every break in the straightness of a row of growing crops, especially garden crops, is offensive to the eye. If you aim for a garden of beauty and attractive appearance, start in with straight lines and regularity throughout. The cut shows a marker that may be easily made by any gardener of ingenuity. Take one inch boards, cut to a circle and bevel the edges. The wheels revolve on an iron rod and are held at the desired distance by pieces of 4 x 4 in scantling, through the centre of each, lengthwise, is bored a hole of corresponding size. A handle fastened to the centerpiece and braced by iron rods completes the tool.—Farm and Home.

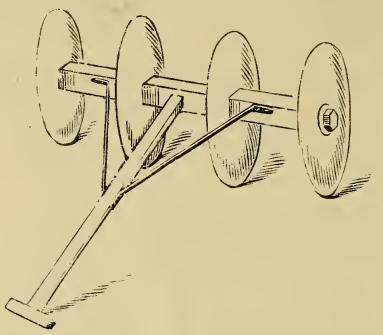


FIG. 666.

THE ONTARIO APPLE.

SIR,—In the Annual Report for 1893, at page 59, I am credited with having made some statements as to this apple, which, according to my recollection, were not made by me, but by Mr. Beall, of Lindsay, who has had more experience with this tree than I have had. Before seeing the Annual Report—it only came to hand to-day—I was about to write to ask you or your correspondents whether the Ontario is or is not a hardy tree. My experience is very limited, but it points to the fact that the tree is not hardy, and that it is not a clean healthy growing tree. Out of 100 standard trees of this variety planted two years ago, 25 have failed, having apparently been frozen after having made a fair start, and the stems of a number of others are scraggy and rough, indicating anything but a healthy growth. Of 60 small trees—one year old—which I set out a year ago, 8 have failed altogether, and 17 others have apparently been frozen down to the snow line during the past winter. I have thus only a liitle over one-half of the 60 trees left in a healthy condition. My losses with other trees, some of them planted three years ago, some of them last year, and including plums and cherries, as well as apples, have not exceeded four per cent.

Peterboro'. E. B. EDWARDS.

A GOOD FARM GATE.

We give an illustration of a strong built farm gate. The usual trouble with farm gates, especially with heavy ones, is that the posts upon which they are hung are too small and cannot be made to stand firm. Where a gate is hung in a frame such as is shown in the illustration, there is little chance for the posts to become inclined and allow the gate to "sag." If made of good material, and well painted, such a gate will last a long time. The frame can be ornamental.—American Agriculturist.

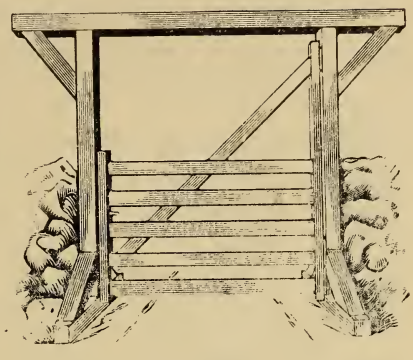


FIG. 667.

Flowers in the House.—Never be without them. We believe there is more real pleasure in a bunch of common flowers cut from our own garden or sent in by our friends or neighbors, or gathered in the field or wood, or by the roadside, by our own children, than in the costly bloom from the florists' stores; the one is the blossom of love, the other is more the word of fashion. Always have a few flowers on the parlor table, and never be without them on your dining-room table. Avoid big garish bunches and don't jam them tightly into the dishes or vases so as to get quantity or variety into a small space; arrange them loosely, giving every flower and leaf room enough to show itself to good advantage, and, if you can avoid it, don't jumble up many sorts of flowers into a dish together, better have only one kind or a few kinds, but you can have different colors or forms of the same flower together, say a bunch of mixed columbines, or irises, or pansies, or sweet peas. And although the bare blossoms are pretty enough by themselves, a good sprinkling of foliage improves them greatly, and if possible their own foliage.—Gardening.

Black Currant Bushes are badly infested in some sections by the black currant mite. Its presence is detected by the distortion of the buds, the buds becoming swollen and filled by the whitish mites and unable to throw out fruit and but seldom leaves. The round eggs are found early in the season in the buds, and frost has no effect on the mites. When buying black currants, examine carefully for this pest; the unnaturally swollen buds show their presence. By no means take cuttings from infested bushes. Abnormally swollen buds should be picked off and burned. Infested bushes should be pruned severely and prunings burned. Cut in the autumn and spray with a solution of 1 oz. Paris green to 10 or 12 gals. of water, with 2 oz. of fine wheat flour added to 2 oz. of soft soap, that the solution may stick to the bushes.

THE CLEMATIS.

SIR,—I have never seen anything about the treatment of the different kinds of Clematis. I have found by experience that they generally require cutting down in the autumn, but lately I have read that a Henry or James Gould flowers on last year's growth For years I have been wondering why mine did not flower.

GARDENER, *Peterboro'*.

OUR correspondent will be well answered by the following from the "Gardeners' Chronicle":—These beautiful hardy climbing plants, of which there is such a large variety, are classified under the following types; and, taking them in their order of blooming, the first is the Montana type, and which are spring bloomers. The most important are C. montana, which flowers in large clusters in the month of May. Next comes the Patens type, consisting of very bright, showy varieties, blooming principally during May and June, and of which the following are a few of the best: Albert Victor, Miss Bateman, Miss Crawshay, Mrs. George Jackman, Mrs. Quilter and Standishii.

These are succeeded by the double and single blooming varieties known as the Florida type, which flower during June and July; the best varieties are Belle of Woking, Countess of Lovelace, Duchess of Edinburgh, Fortunei, John Gould, Veitch and Lucie Lemoine. All the above-mentioned types flower on the previous year's wood, if well ripened, so that only the weak, straggling, or overcrowded branches should be pruned out, if a fine display of bloom is to be obtained; and this should be done as soon as the winter frosts are over.

The Graveolens type are late summer bloomers, but little planted; and except to run over thickets, or over the stems and boughs of trees, the flowers being small and poor in quality. Of these are C. vitalba, though this in the autumn is very conspicuous, with its shaggy plumose fruits, from which it has gained the name of Old Man's Beard. It is also commonly known as Traveler's Joy, or White Vine.

The Lanuginosa type are the next in succession, flowering from July to October, and very effective the fine and large blooms of some varieties are. Alba Magna, Blue Gem, Fairy Queen, Gem, Henryii, Lanuginosa, Candida, Madame Van Houtte, Princess of Wales and Purpurea elegans, are amongst the best. These varieties flower successionally on the short lateral summer shoots, and should therefore be pruned down to about three feet from the ground every spring, to prevent them becoming long and bare of young shoots near the base, the tendency of the plants being to develop new growth at the extremities.

The Viticella and Jackmanni types flower at the same time in profuse continuous masses on the young summer shoots till the frost comes, making them very attractive. Of the former type the following may be mentioned: Ascotiensis, Lady Bovill, Mrs. James Bateman, Viticella rubra grandiflora; and of the latter, Gipsy Queen, Jackmanni, Madame Grange, Rubella, Jackmanni

superba and Velutina purpurea. These should be pruned so as to assist the development of strong shoots by cutting the summer growth as soon as the frost has disfigured them.

Clematises grow freely in most garden soils which are of good texture, but where it can be provided, a rich loamy soil is the best, and if this can be mixed with chalk or lime it is generally found beneficial. Thorough drainage is absolutely necessary to grow good healthy plants, and their strength should be maintained by manuring with horse or cow manure at least once a year. For planting, the spring and autumn are undoubtedly the most suitable times.

The uses to which the clematis may be applied are numerous. They may be trained up verandas, walls, or trellis work; made to climb up poles, forming pillar plants; festooned, run over masses of rockwork or rootwork, or trained over iron supports as specimens for lawns. The summer and autumn flowering varieties are also used as bedding plants, the young shoots being pegged down before they get entangled. The best effect is obtained by raising the surface of the bed, or using hooped rods, to display the flowers better, and edging the bed with white or yellowish foliaged plants. The beds should be well manured and trenched before planting, and I should recommend, where it is possible, to plant the clematis permanently, so that they should not be disturbed, as each year they would get stronger, and flower even more profusely.

Pæonies.—To succeed with pæonies, the plants must be well cared for; they require direct full sunshine, and a deep, heavy soil. Yet they may do fairly well in a light soil. In either case the soil must be worked well and often. We frequently find a clump in dense shade and so completely covered with grass that the plant is scarcely visible. Is it a wonder that we are told the pæony is running out, that it does not flower as it did twenty years ago? Of course not. How can it thrive when the trees and grass have robbed it of food, sun and air? In the nursery where it has a chance to breathe, and is cultivated with care, it is the same generous, magnificent old bloomer that was everybody's favorite fifty years ago. When once well planted it need not be disturbed for many years, but every autumn it should be given a liberal mulching to protect it against hard frosts. This mulch should be carefully worked into the soil as soon as growth commences in spring, and if grass and weeds are not allowed to intrude, one of the most beautiful objects that ever decorated a garden will be the result. The old herbaceous pæonies are too well known to require description, but there are one or two species not generally known, which are entitled to a place in every garden. One is P. tenuifolia, the fern-leaved pæony, a native of Russia. The fine, fern-like foliage of this species renders the plant a beautiful object independent of the beautiful crimson flowers, which are the first of its class to appear in spring. The flowers of the original species are single. There is a double variety of it, which is much used by florists for forcing, and it is a very attractive plant. For the border it is equally desirable.—American Agriculturist.

A JARDINIERE TABLE.

Nothing in the way of home decorations, or as a setting for the flowers dear to one's heart, is prettier than the jardinières that are now made in most attractive shapes and in most beautiful colors. These articles in themselves are in the highest degree decorative, and when filled with a profusion of bloom they leave little to be desired—unless, perhaps, it be an attractive little table just suited to show off the daintiness of the jardinière and its burden of blossoms!

The illustration accompanying this shows a table that, in its lightness and freedom from the stiffness that is common with solidly-built tables, or plant-stands, becomes a very appropriate resting-place for such a flower-laden receptacle. The top and the shelf below are of cherry, left in its natural state, and so unspoiled by the vivid red stain that is so commonly given this naturally beautiful wood. The rest of the table is made of bamboo, the spindles, cross-pieces and the legs varying so completely, but gradually, in size, that there need be very little waste in cutting up a bamboo pole for this purpose. The top of the table being somewhat thick, permits sockets to be made in its under surface, and cut to within a half-inch of the upper surface, into which the legs are snugly fitted and thoroughly glued. If the rest of the frame-work is put together evenly and strongly, the table complete will be very stiff and strong. Care should be taken to have it rest with perfect evenness upon the floor.

I have said that jardinières are made in beautiful shapes and colors. This is true, but it is unfortunately true that they are also made in colors and with decorations that are decidedly the reverse, and their ugliness is only made more prominent by their association with dainty blossoms. Good taste is therefore of special importance here.

The jardinière table that is figured ought to be easily within the constructive powers of anyone at all handy with tools, and the making of a bit of attractive home furnishing adds much to its possession.—The Country Gentleman.

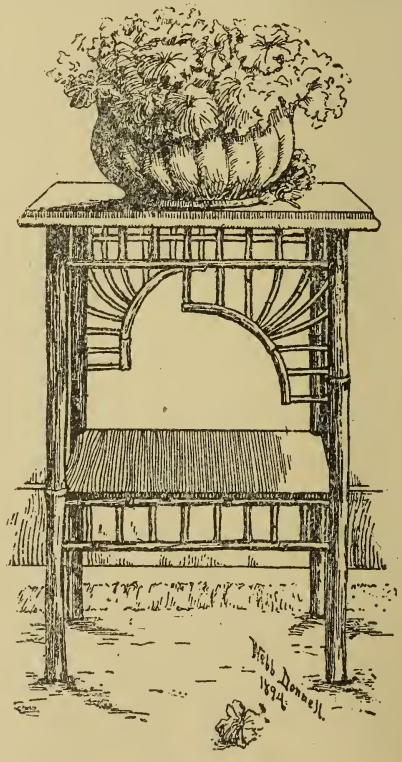


FIG. 668.

The Elberta, according to some authorities, is one of the hardiest of peaches. It is excellent in quality and very productive.

THE PLANT ROOM.

Not every one can afford the luxury of a greenhouse for flowers in winter, but it is very easy to add a plant room to any house, opening off the dining, or sitting room, where with any extra fire, a good collection of window plants may be grown. This plan will add much to the beauty of the adjoining apartment, and will furnish beautiful plants for decoration without much expense. Fig. 669 from the "Country Gentleman," shows such a plant room, which opens out of the dining room, and here is afforded a chance to insert a light door frame with open-work around it, which will let in a flood of light, and many glimpses of growing and flowering plants. A suggestion for such open-work is presented herewith. Large doorways with portières are between the hall and parlor, and the parlor and dining room. The china closet opens from both the dining room and the kitchen. The kitchen sink is against this same wall. The plant room may have a glass door communicating with the southwest piazza for summer use, if desired.

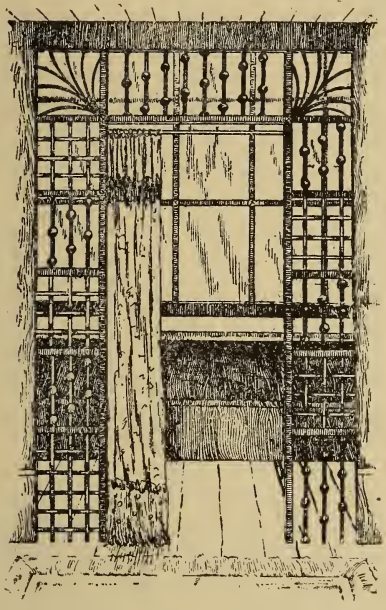


FIG. 669.—DOORWAY BETWEEN DINING AND PLANT ROOM.

Sowing Small Seeds.—Others besides amateurs are bothered at times to scatter small seeds over the bed or into the drill in the way the careful man always likes to see seed-sowing done. A very simple contrivance for sowing radish, onion and other small, smooth seeds, thinly and evenly, consists of a bottle, a cork and a quill. Say an ounce of radish seed has to be sown. It is put into a bottle, mixed up with a pint of very coarse sand, well and evenly. A gimlet hole is made through the cork and a quill, or magnum-bonum pen, put in. The lines for the seed are marked across the bed at three inches apart, and the bottle being turned, the sand and seeds slip through evenly and gradually. The faster the bottle is moved along the row the thinner the seed is sown. The same plan may be adopted with parsley, carrot, parsnip, carraway and other uneven and rough seeds, only they must be first rubbed along with the sand to break the hooked spines by which they cling to each other. With lettuce, and other light seeds, a lighter material, such as ashes, may be used. It is an advantage to have the plants in regular lines, because it is easier to weed them, and greater facilities exist for hoeing and giving water and liquid manure.—Ex.

FIG. 670.

WHAT SHALL WE PLANT?

WHEN a man begins to plant his home-grounds, with the primary aim of making a consistent picture of the whole, or, if he is wiser still, and designs his house and its surroundings together so that they make one inseparable composition, he should select every tree and shrub and herb, not for its individual decorative qualities, but for its value in helping to realize and express the ideal house-scene which he has mentally created. His fences, his walks and lines of approach, his stretches of grass, the masses of verdure which connect his house-foundations with the grounds, are all features of one scene, and they are all so related to each other that we should not consider the attractiveness of single elements apart from the rest, but should estimate their value as they help to round out the symmetry and beauty of the whole. To create a good house-scene is the work of a real artist, and artists of the first rank are rare in every profession, more rare, perhaps, in landscape-gardening than in any other of the arts of design.

But men may plant with pleasure and intelligence even when they have not this high creative faculty. To secure a collection of shrubs chosen for striking habit, or profuse flowering, or because they are curious and rare, or simply because they are vegetable anomalies, whose merit consists in blanched or spotted or highly colored foliage, may not be an unworthy ambition. And since the collector's regard is for individual plants, he is not to be criticized if in his arrangement of them his only aim is to show each one to the best advantage, without any regard to the effect which they produce when taken together. It is safe to say, however, that anyone fails to get the highest possible enjoyment out of horticulture unless he recognizes some definite system under which he selects and arranges his plants. If he is interested in them simply because they are odd or novel, he should not delude himself with the belief that he loves them for their beauty. He may obtain keener enjoyment from vegetable freaks and curiosities than from plants which are simply beautiful, and if this is so no one has a right to protest against the indulgence of such a passion. The people who live next door to him may regret his inclination, but their case is not so hard as it would be if he chose to build a house which was eccentric or conspicuously ugly. A great deal of intelligent and not unprofitable pleasure can be derived from a garden filled entirely with rare or abnormal plants, although they would be much less beautiful than the common plants in ordinary gardens. But in this case, too, the man who has a paramount love for oddities should recognize it as such, and he should not try to persuade himself or his neighbors that his museum is filled with objects of beauty, or that his treasures have more value than theirs. —Garden and Forest.

KEYNOTE IN LANDSCAPE GARDEN.

Where a place is so fortunate as to possess an attractive prospect from an elevation, everything in the foreground should be subordinated to this broad picture, and nothing should be placed so as to distract the attention. Strong forms of an occasional tree in the foreground may, by their sharp contrast with the dim and shimmering lines beyond, add depth and mystery to the distance, but there should be nothing trivial, nothing to prevent the eye from leaping straightway to the interesting point beyond, and, above all, nothing in the nature of clutter or trifling ornament near at hand. Where there is no important outlook, good landscape-effects can be compassed, wherever there is room enough, by availing one's self of slight undulations of the surface, increasing the height of the elevations and the depth of the depressions by planting, by adroitly managed shadows, and paths which vanish mysteriously behind a thicket. Where there is neither space nor view, a garden of rare and choice plants can be made the centre of interest, and, if these are not within the means of the proprietor, less costly flowers arranged with taste and skill may bring never-failing delight.

But, whatever the arrangement, there must always be some key-note, as in a painted canvas some high light contrasted with deep shadow, which will turn even a little garden into a picture. What is needed for this is the same kind of thought which a painter gives when he sits down before his canvas. No artist selects a subject without due consideration. There must be something in it—a tone, a shadow, a broad light—which makes the homeliest object artistic. The mental picture which the gardener frames it may take years to completely develop, but, so long as he keeps in mind this central note upon which the whole scheme is keyed, he can always work upon this motive, and add such details from year to year as the growing picture itself suggests new combinations. Time spent in such study is time most delightfully spent, for ideas can be sought in every walk through the grassy path of a woodland; every neglected roadside contains a lesson; every river bank, along which he may drift, affords a hint for new combinations, and the whole world becomes a sketch book, full of designs by the greatest of artists, which he may adopt and adapt, without charge of plagiarism. —Garden and Forest.

SPECIFIC ACTION OF PHOSPHATES UPON PLANTS. — Experiments have shown that plants will die before reaching maturity, unless they have phosphorus compounds to feed upon. Phosphates appear to perform two distinct functions for plants. *First, they themselves aid in the nutrition of the plant*, and, *Second, they aid the plant*, in some way or other, *to make use of or assimilate the other mineral ingredients.* Phosphorus is mostly found in the seeds of the plant, and, as already stated, a plant does not come to maturity and so does not produce seeds, unless phosphates are present in the soil for the plants to feed upon.—General Expert. Station B. 55.

FLORICULTURAL HINTS.

The Lawn.—While too frequent mowing is injurious to the lawn, we should not let the grass get so long that the mower won't cut it easily. About once a week is right at this time of the year; later when the weather gets hot and dry, mowing may be less frequent. When the grass gets too long the mower cuts it irregularly and in streaks, and the work is very hard, better switch it over with the scythe or sickle first, then rake it off before mowing. If wild onions, dandelion blooms, shepherd's purse or other weeds have sprung up too high for the mower to catch, they should be switched off before mowing. Rolling the ground immediately before mowing bends down the long grass and weeds enough, as a rule to enable the mower to catch them and cut them.

In mowing be always on the lookout for sticks, stones, and other trash on the lawns that might be caught by the machine and gap its knives. Scraps of wire or nails are very bad. Never bump the machine up against the stems of small trees to cut, mar, or bruise the bark; to prevent workmen of doing this is one of the main reasons why we have a bare ring around the young trees at Dosoris. This circle is kept clean and mulched. In mowing around evergreens be very particular not to nip off the points of any of the ground branches, for it spoils the shape of the trees.

Lily of the Valley is one of the sweetest and most esteemed of all hardy garden flowers, and happily one of the easiest grown. Plant it anywhere, in sunshine or shade, in cultivated or wild land, and it will grow and spread and bear blossoms. But if one will have the very finest lilies—seventeen to twenty-one bells to a spike, a moderately open situation, deep, rich, moistish ground, and an annual topdressing of rotted manure are the price to pay for them, and they are worth it. Plucking the flowers does the plants good. And when the plants become crowded, digging out strips of them to let the others have more room, will benefit them. We use thinnings for forcing in winter.

Plants in the House.—Although our windows may be emptied of their winter occupants, and the flower stands are stored in the cellar or shed, we like to have a few plants in pots in the house, even in summer. These consist of palms, screw pines, ferns, rubber plants, begonias and the like, that will thrive in the shade and not show the evil effects of draughts rapidly. Plants in bloom are seldom used for this purpose, because of the dropping blossoms, for they seldom last more than a few days in good condition away from the window, and we don't want to choke up our windows with plants in summer. The larger plants are set in vases in the hall, and the lesser ones on brackets or on sideboards, and one or two should always be kept handy to place on the dining table. But with cut flowers we may make our rooms as cheerful as we please.

—American Gardening.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

Mr. Thos. Harris, of Meaford, who invented the Harris step ladder for fruit picking, says he has also invented a knife for thinning out fruit, and a pruning hook for pruning shrubs and bushes.

Some Good Grapes.—Prof. G. W. McOver, of the Illinois station, recommends the following varieties of grapes, after testing ninety-eight varieties, viz. :—*For market*, black, Concord, Worden and Ives; red, Delaware and Lindley; white, Grein's Golden, Elvira, Niagara and Green Mountain.

Spraying for Plum Rot.—Mr. H. Gorman, of the Kentucky station, reports in favor of the Bordeaux mixture against the brown rot of plums. He applied it on the 9th of June and the 5th of July; but, of course, we at the north must make due allowance for the difference in season. At the time of gathering, August the 22, although some rotting fruit was observable on both sprayed and unsprayed trees, and much had dropped during the season, yet when the crop from all was weighed, there was a difference of 48 per cent. in quantity of good fruit, in favor of the sprayed trees.

The Canadian Fruit Buyers and Exporters Association has issued a circular calling for members, in order to further their objects. It also calls attention to the evils, which are bringing the trials into disrepute, and cause so many heavy losses. For instance, the circular condemns buying at a certain amount and the rise, as an unbusiness like method. Then we have no recognized standards, either as to quality or grading. This society holds its annual meeting in Toronto, the 1st Tuesday in August, 1894; John A. Cooper, Toronto, is Secretary-Treasurer.

SOME PRONOUNCIATIONS CORRECTED.—Mr. Nicholson, in his "Dictionary of Gardening," points out many correct pronunciations of flowers and fruits, some of which we will notice from time to time. For example, among flowers he gives the following accents :—Anemo'ne, Ar'but-us, Az-al'-ĕ-a, Carpī-nus, Clē-mat-is, Col'ĕus, Croc'-us, Cȳ'clam en, Dăh'lia, Fuch'sĭa (Fook'sĭ-a), Gerăn'ium, Glad'i-ol-us, Pyrĕth'rum, Ros'a, etc.

THINNING PEARS.—The "Rural New Yorker" contains replies from several prominent fruit growers to several questions under this head, from which it would appear that while some of the very best orchardists practise thinning their fruits to a limited extent, yet, generally speaking, it is quite a neglected practice. Isaac Hicks, of New York State, declares that with the Bartlett and Kieffer pears, thinning is absolutely necessary for the production of fine fruit, and he says that some years he removes from one-third to one-half, and sometimes in the case of the Kieffer, three-quarters. He does this work before the pears are one-third grown. Mr. George T. Powell, also of New York State, says that last year he thinned the pears from fifteen hundred young trees, all of which were overloaded.

There is no doubt about the advantage to be derived from the judicious thinning of fruits, the only question is the expense. Most fruit growers in Ontario are taxed to the very utmost in the growing season, and with many it is simply impossible at that time to spare the time necessary to accomplish the work. No doubt as the years go on, and we become better and better able to afford the workmen necessary to cultivate our garden and fruit farms as they should be cultivated, this practice of thinning our fruits, not only pears, but apples, peaches and grapes, will receive more and more attention.

SPRAYING tests have been instituted by the Central Experimental Farm at Grimsby, Winona and St. Catharines, in response to a request made by the Fruit Growers' Association of Ontario at our last winter meeting. Prof. Craig has spent about a week in these parts, inaugurating the experiments, and has now left the work in charge of a committee in each place. Tests are being made of the efficacy of the Bordeaux mixture for apple and pear scab, peach curl, and plum rot; and of Paris green, in combination with the same, for curculio and codling moth. The fruit gathered from trees treated and not treated, is to be graded, counted and measured, and the results faithfully compared. The results will be reported upon by the committee and their report published, in order that we may know definitely whether it will pay us all to go to the expense of frequent spraying or not.

SPRAYING pumps also were tested in the presence of a good many fruit growers. Some of the pumps were too weak in parts to stand the pressure required, but evidently the most important thing is a suitable nozzle. For near work, as in the vineyard and small trees, the Vermorel is the best, producing a

very fine spray ; but for large trees the McGowan nozzle is just the thing. The fact is, that we in Canada are not up to the times in these spraying outfits, and it is time some wide-awake manufacturer gave his attention to the spraying outfits required. Many pedlars of spraying pumps are selling the old Boss nozzle, which may do for washing wagons, but is too extravagant of the liquid for orchard use. The writer has been using the Masson nozzle for two years with much satisfaction, but the McGowan is still better.

Fig. 671 represents a side view of a McGowan nozzle, and a cross section of the piston, about three-quarters natural size. Across the top of tube *w* is the cylinder *u* closed at the end on the right by a bevelled block. The orifice *v* is closed by a sliding piston which is composed of one or two pieces. The cross section of the piston shown in Fig. 671 represents the form having two parts, an inner piston which can be screwed out, as represented by the dotted line *e*, and

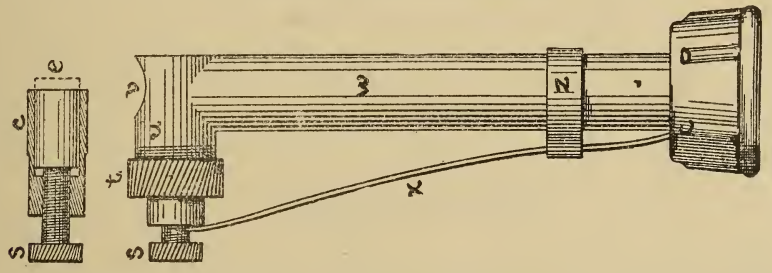


FIG. 671.—MCGOWAN NOZZLE.

an outer part or sleeve, *c*. *By turning the button, s, the spray can be changed instantly from a long distance spray suitable for orchards, to a spray so fine that it will float in the air like a mist.* It can be adjusted as desired and will stay as adjusted. The spring *x* is designed to hold the sliding valve in position except when obstructions become lodged in the nozzle. As such obstructions prevent the passage of any fluid which may be in use, the pressure upon the liquid in the nozzle instantly increases. This forces the piston back from the outlet orifice so the opening will admit the passage of any substance not larger than $\frac{1}{5} \times \frac{3}{16}$ inches. When the obstruction is removed the spring forces the valve back into position and the nozzle works again normally as desired. The tension of the spring can be varied by moving the spring *z* up or down.

Tomato Cans, and other cans in which fruit and vegetables have been canned, may be made of value by fruit and plant growers in which to pot off young plants. Remove the paper from around the can and set the opened end on coals of fire. The solder melting, the end drops off and leaves the can in fine condition for use. With a hatchet cut a few small holes in the bottom of the can, and put in plenty of drainage of broken pots, charcoal, etc. If the cans burst apart or explode, cut the hole in the end before heating.—Farm and Home.

Question Drawer.

Carp. *(Question No. 640.)*

Mr. W. B. Rittenhouse, Beamsville, Ont., deals in carp and other fish.

A Good Spraying Pump.

648. Sir,—Could you recommend me a good spraying pump, suitable for a fourteen acre orchard? F. J. Dawson, *Newmarket.*

There are so many force pumps in the market now, all claiming to be best for spraying, that we do not care to particularize. The important point is to have a first-class nozzle; and for near work the best is the Vermorel, while for orchard trees of large size the McGowan is the best. These nozzles give a beautifully fine spray, and may be attached to the hose of any force pump. It is also important to have about ten feet of hose for each nozzle, so that it may be elevated with a pole when necessary.

Bignonia Radicans.

649. Sir,—I have a vine of the Trumpet flower which never flowers, though well covered and cared for. It comes up from the root every year, instead of the last year's growth surviving the winter. Gardener, *Peterboro'.*

The trouble is that this creeper is too tender for your climate. We grow it at Grimsby with difficulty, the young shoots being always partially killed back, but it gradually grows up higher and stronger, and produces a fine show of beautiful large trumpet-shaped flowers. One old stone house here is almost covered on one side with this fine creeper, but it is after some thirty years of growth.

New Land with Peaches.

650. Sir,—Would it be advisable to set peach trees on new land, where the stumps were not all removed; or would these conditions favor the borer? When does Hyne's Surprise peach ripen? Is the Foster an abundant or a shy bearer?

Youngster.

The borer would be no worse in this land than in any other, for it is a kind that is peculiar to the peach. The same precautions which save trees elsewhere from its attacks will answer with you, viz., heaping earth about the trunks, about the beginning of June, and leaving it at least three months, during the period when the moth, Ægeria exitiosa, flies about. Hyne's Surprise ripens just after Early Rivers. The Foster is a good peach but only a moderate bearer.

Artificial Fertilizers for Raspberries and Other Fruits.

651. SIR,—What is the best fertilizer for raspberries? How much is best to apply to a hill, or to an acre of berry bushes; soil, a strong clay loam.

W. P. R., *Oshawa.*

Probably half a pound each of superphosphate and of muriate of potash, would not be too much for raspberry bushes. This could be applied at any time; and in the growing season, nitrate of soda about an equal quantity. Which of these fertilizers your soil most needs, and the amount, can only be proved by actual experiment, and it would be well to try the phosphates on one portion and the potash on another, keeping careful notes of the results.

Trees for Street Planting.

652. SIR,—The village of East Toronto have under consideration the planting of all their graded streets on some uniform system. I would like your opinion with regard to the trees most suitable for the purpose. The trees native to the place are the pine, black and white oak, with an occasional maple, but this last tree does not seem to be a long liver with us, for when they are four of five inches in diameter they die off, probably because the roots reach the dead sand which underlies our surface soil. The plan recommended to us by an experienced amateur is to plant trees forty feet apart from side to side of the street, and, if elm will grow in our soil, to plant these sixty or seventy feet apart, giving permission to the owners to plant other trees between, if they desire. On our main streets and on the streets where the electric cars run, we propose to plant the trees fifty feet apart from side to side, in place of forty.

R. MORTON, *Toronto, Ont.*

It is a very important matter to select the proper kind of tree for such planting. The maple is somewhat unsatisfactory in certain conditions of soil and climate, and where it does make a thrifty and vigorous growth, the foliage is too dense for a street tree; besides, it so completely hides the view of the buildings and shuts in from the inhabitants every pleasant prospect, that we do not at all admire it for the street. The oaks are magnificent trees, but rather rugged in appearance, and entirely lacking in that gracefulness which should characterize street shade trees. We know of no tree that will be as suitable for your purpose, providing it is adapted to your soil, as the American White Elm (Ulmus Americana). This tree grows to a height of eighty or more feet. Its arching limbs at a lofty height give it a most graceful appearance, and it is not so dense as to close in the pleasant prospect. The trunk and larger branches are often heavily covered with short and leafy boughs, and streets planted with these trees become columned and arched like the aisles of a cathedral. Any one who has visited the city of Syracuse, N. Y., will be impressed with the magnificence of this tree. Several of the finest avenues are thus arched, both over the carriage-way and the foot-path, with these noble trees; the elms of Boston are also famous. Do not mistake and plant the Slippery Elm (Ulmus fulva), which is very common in Canada, in place of the American elm, for it is a tree which does not reach more than half the height of the White elm, and in every way is inferior to the other. The distances which you mention for the planting the trees apart are about right.

The Ichneumon. *(See question 645.)*

The insect sent with your letter of April 17th, and which was received from a correspondent who had found it emerging from a hole as large as a pigeon shot in an old plum tree, and, as he states, leaving a cocoon at the outlet of one of the holes; is a beneficial insect. It belongs to the Ichneumon flies, all of which are parasitic upon other insects. The holes are probably the work of some boring beetle which had attacked the tree in its larval state. Mr. W. H. Harrington, of Ottawa, who is our leading Canadian specialist in *Hymenoptera*, thinks that, as far as he can judge from the crushed fragment forwarded by you, the species is *Ichneumon acerbus*. J. FLETCHER.

Russian Apricot. *(See question 646.)*

I explain how I got my trees in bearing. I had a seedling tree of which the pit came from Russia. This was often completely covered with bloom, and that early, but not one would set. I concluded to graft another kind on it, or else kill it. I grafted on Budd and Gibb. On the second year they were covered with bloom, both the grafts and the original top; and indeed the fruit of the seedling was better than that from the grafts. Since that it has never failed, until lately the borers are destroying the tree.

D. B. HOOVER, *Almira, Ont.*

The Raspberry Beetle.

A small black beetle has of late been doing serious injury to the raspberry canes about Grimsby, by eating out the fruit buds, and thus destroying the crop. Spraying with Paris green seemed useless, so we enclosed some samples to Mr. Fletcher, Entomologist of the Central Experimental Farm, who replies as follows:

The beetles you send in the bottle are the Spotted Paria, *Paria sep-notata* Say. This a most injurious insect and has done much damage to raspberries in the way you describe, at St. Catharines. It seems to be very difficult to kill. I would suggest you spray the raspberry bushes at once with Paris green and slacked lime, one pound of Paris green to 25 of lime. This is easiest applied by putting it in a bag of cheese cloth and shaking or tapping it over the bushes. Of course, if you can get a morning when there is dew on them, so much the better. They may be also killed in large numbers by beating or shaking the insects off the canes into an open pan containing water with a little coal oil on the top. A good plan for collecting them is to hold an open and inverted umbrella beneath the canes, and then brush the insects out into the coal oil pan. I shall be much obliged if you will try both of these remedies and let me know whether or not they succeed.

THE SMALL FRUIT CROP REPORT.

THE CONDITIONS.—The month of May just passed has been noted above all precedent for rain. Only three fine days out of the last eighteen, just at the time when the bloom has fallen, and the third spraying should be made. The Weather Bureau reports ten inches of rain fall during the month, which passes all record. The ground is so wet we cannot drive on it to spray, even on a fine day; seeds of vegetables and even grains are rotting in the ground; tender trees, especially the peach is suffering severely, not only with leaf curl, but from the excessive wet in the soil. For nearly a month the conditions even in the best drained soil, are much the same as when peaches are planted in wet soil, and the result is the leaves are dying and falling and the peach orchards which gave promise of an abundant crop, now look sickly. The gooseberry mildew is gaining fast upon us; cherry rot has appeared and no doubt apple and pear will follow, unless we can soon apply the Bordeaux mixture. But thus far the apple and pear crop promises a prodigious yield. The young fruit never set better, it holds firmly to the trees, and looks clean and bright. So possibly our British Markets will awake to the fact that Canada's apple crop is worth competing after, notwithstanding the failures of recent years.

In addition to the evil effects of too much rain, great injury has resulted in Central and Northern Ontario from severe frosts from which small fruits and grapes have suffered severely.

REPORTS.—The following inquiries have been sent out to various parts of Ontario, in order to procure reliable information about the prospective fruit crops, viz. :—

1. *Please give per cent. of a full crop of small fruits?*
2. *What percentage of cherry crop is affected with rot? of gooseberry with mildew?*
3. *What damage by frost?*
4. *What by rain?*

Southern Ontario.—W. M. Orr, Stoney Creek: (1) Strawberries 85, Cherries 90, Currants 90, Gooseberries 100, Raspberries 80; (2) No rot nor mildew; (3) Very little; (4) Peach trees suffering.

C. M. Honsberger, Jordan Station: (1) Strawberries 50, Cherries 10, Currants 90, Gooseberries 90, Raspberries 100; (2) Cherries 50, Gooseberries 25; (4) 10 per cent.

I. H. Broderick, St. Catharines: (1) Strawberries 90, Sour cherries 50, Sweet cherries 90, Currants 50, Raspberries 50; (3) Raspberries 50.

E. Morden, Niagara Falls South: (1) 75 to 100; (3) Frost last night, 29th, did a good deal of damage to strawberries.

Chas. Lowry, St. Davids: (1) Cherries 25, other small fruits 75.

W. V. Hopkins, Burlington: (1) Strawberries 95, Cherries 60, Currants and Gooseberries 65, Raspberries, 75.

Alex. McNeill, Windsor: (1) Small fruits about 90; (2, 3, 4) No mildew, no damage from frost or rain.

A. W. Graham, St. Thomas: (1) Small fruits a full crop. I never saw them look better. Raspberries, say 80 per cent. Most cherry trees in this section have been destroyed by black knot, but what trees are left, are loaded with fruit. No rot. There is also little

or no mildew on the gooseberries ; and no damage by rain. Grapes badly injured, say 50 per cent., by the frost of the 28th ult. Apples and pears promise well, but plums very few.

J. A. Morton, Wingham : Strawberries had a three-fourth crop prior to late frost, the full effects of it are not yet visible ; cherries one-half crop ; currants three-fourth crop, slightly damaged by frost ; raspberries not yet far enough advanced to form any accurate estimate. No rot as yet on cherry crop.

Middle Ontario.—T. H. Roe, Mitchell : Damage very considerable from frost last night (28th) ; grapes totally ruined ; strawberry blossoms turning black.

J. D. Stewart, Russeldale : Up to the evening of the 28th, a full crop of every kind of fruit ; the following morning, owing to the intense frost, the fruit outlook could scarcely be poorer, especially in strawberries, currants, gooseberries, cherries, plums, pears and grapes, the latter showing not a vestige of green. Prospects anything but encouraging.

A. D. McAllan, Goderich : (1) Strawberries 75 ; other small fruits 100 ; (2) No rot or mildew.

Thos. Beall, Lindsay : (1) We expect full crops ; (2) No mildew ; (3) 25 per cent. at least of grape crop will be lost by frost on the 15th ; (4) I fear very great injury from the rain.

W. S. Turner, Cornwall : (1) Strawberries 100, Currants and Raspberries 90 ; (3) Grapes slightly damaged.

A Good Ice House.—You should have about 50 tons to last six months, using 500 pounds a day. There will be some waste. A house 16 feet square and 10 feet high to eaves will hold about 50 tons. You can build above or below ground, but in either case secure dry foundation, weather boarded on outside and ceiled on inside, packed with sawdust between, with cement floor slightly concave and inclined to one side or end, and a shingle roof, makes a first-class ice house. The foundation must be air tight. Cover the floor with six inches of sawdust, make level on top and cover with boards placed an inch apart for drainage. Pack the ice a foot from the walls all around ; build up as square and as solid as possible, filling up all cavities with broken ice. Pack in sawdust between ice and walls as you build up the ice. When filled, cover with a foot of sawdust. Put doors in each end of the gable for ventilation. The doors below should be double and filled with sawdust. Give plenty of ventilation above and none below. As ice is taken out be sure to keep the mass wel packed—no cavities for air to penetrate. In such a house ice will keep with little waste, if the water is carried off as it forms.—Ex.

Pruning.—In the last report of the American Pomological Society, a writing on pruning protests against this dreadful violation of nature, maintaining that every branch cut off is an attack upon the vitality of the tree, and an injury to it. I have not the volume on hand to refer to. In a drier climate, trees may make less wood, but in this country, keeping wood-growth in check, by disbuddidg, pinching off and removing superfluous wood is imperative to fruitfulness. I have had trees twenty years old, absolutely barren and worthless, until half or more than half of the wood was removed, that were thenceforward annual bearers. With fruit trees, the object sought is not timber or fire-wood, but fruit, and this can only be attained by limiting wood-growth.—CHARLES E. BROWN, Yarmouth, N.S.

TOLMAN'S SWEET.

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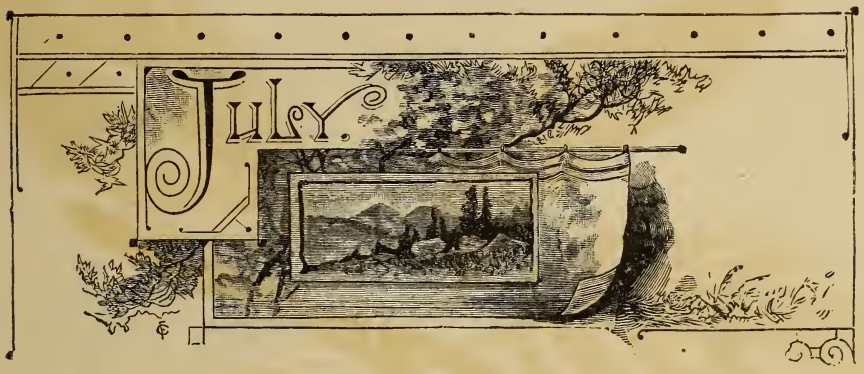


THE TALMAN SWEET.

SOME of our readers may criticise us for bringing into such prominence in this journal, an old variety of apple, which has little or no market value in Canada. But the Talman Sweet has great value as food for stock; the food is easier grown than carrots, and excels them as food for our horses. In the home it is highly prized by many people as a dessert apple, and those who are fond of bread and milk will find it a delicious addition to that wholesome article of diet, if first well baked in the oven. In the Eastern States the Talman Sweet is considerably grown for market, because in such cities as Boston there is a special demand for this fruit. In Canada there is little use in growing it for market, because there is no demand for sweet apples in either the English or the Canadian markets.

The Talman Sweet is a native of Rhode Island. The tree is a vigorous grower, with an upright spreading top.

The fruit is thus described by Mr. Charles Downing:—Form, nearly globular When fully ripe whitish yellow, with a soft blush on one side, and generally a line running from stem to calyx. Stalk rather long and slender, inclining to one side, and inserted in a rather wide, shallow, but regular cavity. Calyx set in a small basin. slightly depressed. Flesh quite white, rather firm, fine-grained, with a rich sweet flavor. November to April.

As a stock on which to top graft other varieties, the Talman Sweet cannot be excelled. It is very hardy, of healthy and vigorous growth, very productive and seems to impart to the variety top grafted upon it, some of its excellent qualities. The King is usually a poor bearer, but when grafted on the Talman

Sweet stock, it not only produces fruit of better quality, but is quite productive, We are so convinced of its excellence in this regard, that, if planting a new orchard to-day. we would be inclined to plant all Talman, and later on to top-graft them with the required varieties.

Here is an article by the late Mr. Nicol, of Cataraqui, on this very subject, which is sufficiently opportune to be inserted here.

Many of the choicest varieties of apples, such as the Northern Spy, Ribston Pippin, R. I. Greening, Gravenstein, Baldwin and King of Tomkins County, which are somewhat tender, can be grown successfully by root-grafting or by budding on common stock only in favored localities; yet by top-grafting on hardy stock they can be satisfactorily grown where only hardy varieties succeed in the ordinary way.

The Talman Sweet is peculiarly adapted for this purpose. Next to the Crabs and the Duchess of Oldenburg, it is the hardiest of all known varieties. Indeed, I have found it to be quite equal to the Duchess in this respect. I have known trees of it so mutilated by cattle and horses as to be considered completely destroyed, yet, when given a fair chance, recovered and became remarkably healthy and good bearing trees. In fact, there is no kind of apple tree that will stand as much hard usage and survive. It is less particular as to soil and situation than any other kind of apple tree. It endures dry seasons better than most sorts. Its bark, being of a thick, tough, leathery nature, soon overgrows almost any wound; and good, sound grafts inserted into its branches seldom fail to grow. Its growth is very much of the same habit as that of the Duchess, throwing out its branches at nearly right angles with the trunk; unlike the Spy, which forms forked crotches that readily split when the tree comes to mature age. I have never known a Talman Sweet tree split at the crotches by weight of fruit, by accumulations of ice or by wind storms. In short, it is the most enduring kind of apple tree that I know of.

It should be observed that in top-grafting any kind of apple tree, the whole top should not be cut off at once, because the too-severe check is apt to kill the tree. A far better way is to make a two or three years' process of it; the first and second year grafting only each alternate side branch, and, finally, the third year grafting the top branches.

Branches into which grafts are to be inserted should not be cut off too close to the trunk, where they are of large size, but rather where they are subdivided into branches about 1 or 1¼ inches thick; then the joint quickly heals over; whereas, when grafts are inserted into the side of a large stump they are much more readily broken off.

There are now growing throughout the country a great many Talman Sweet trees—perhaps more than of any other variety of apple. I know of many instances where orchards were planted years ago, and now all that remains of them is the few Talman Sweet trees which constituted part of the selection.

The Talman is by common consent adjudged to be the best baking apple; yet it is hardly salable in any market in Canada; therefore, it is of little value beyond what is required for family use, and for that purpose one or two trees in an orchard is sufficient. If all the others were top-grafted with choice sorts there might be much more good fruit grown.

SWINDLING BY SUBSTITUTING VARIETIES.

JACOB MOORE, of Attica, formerly of Brighton, N. Y., the well-known originator of the Brighton grape, some time ago gave his views on the methods which have been adopted to secure the dissemination of the "products of nature." In view of the experimental work now being undertaken in Ontario, it seems wise to quote his paper in full:

"It has occurred to me to recount some of the notorious swindles in horticulture caused by the lack of exclusive rights to new productions. After the Isabella grape had been generally disseminated, it was named Payne's Early, and sold as a new variety earlier than Isabella. Being 'a product of nature,' there being no law against so doing, why should not the grower put money in his pocket by such means? Eureka was another name given to it at Attica, N. Y. That the Isabella has been frequently introduced under new names is shown by the fact that horticultural authorities mention as many as sixteen synonyms. Catawba has also been re-named many times for the purpose of introducing it as a new variety. After the advent of the Concord, the Maine grape and Chapman's Seedling were heralded in the State of Maine as seedlings earlier and better. Thousands of vines were sold at high prices by this means, but in the course of a few years they were generally recognized as old Concord. Being 'a product of nature' and the dissemination thereof free, there being no law to prevent re-naming it, why should not the propagators put money in their pockets in that way? When the Worden grape was introduced, certain well-known horticulturists proclaimed it to be Concord. Doubtless previous deceptions had put them on the alert for frauds. They were mistaken this time, however, as the Worden, although of the same color and a seedling of the Concord, proved to be a distinct variety, earlier and larger. The announcement, however, that it was identical had the effect to lessen the demand for the vines and thus injured the originator, who is reported to have received no compensation for it. When it was proved to be distinct and valuable much of the demand for it was supplied, as at first by substituting Concord, labeled Worden. Being 'a product of nature,' and the dissemination thereof free, the nurserymen had a right to publish the name and description in their catalogues, whether they had a stock of the plants or not. As a consequence, agents and dealers took orders for them. The nurserymen had plenty of the Concord, and as the two varieties are much alike, 'what harm to substitute that, labeled Worden?' This was accordingly done by unscrupulous nurserymen and dealers to an extent that only the judgment day will reveal. The same game was played with the Brighton on an equally extensive scale. This

grape was produced by an enthusiast named Moore, while a resident of Brighton, N. Y. It was the result of two crosses, the first being from seed of the Diana fertilized with Black Hamburgh, in the year 1860. The best result of the cross was named Diana Hamburgh, which was a magnificent failure. Magnificent because so large, handsome, and good; a failure, because the foliage was liable to mildew and the vine was not sufficiently hardy. The originator was disappointed, but persevered. He re-crossed the Diana Hamburgh with the Concord, and the Brighton grape was the result. He sold the variety to the introducer for less than it cost him, as he had not the means to introduce it himself. The introducer, although fully aware that many parties were swindling the public by means of false labels, was powerless to prevent them, because the variety was 'merely a product of nature, the sale of which must be free and unrestricted.'

"When the Cherry currant first appeared, its sale throughout the United States was a swindle of such magnitude that it may properly be termed *national*. It was first imported from France. The nurserymen with few exceptions, published the name and description in their catalogues in hot haste when there was but a small stock of plants in the country. Immediately the demand for the plants was far greater than the supply, and the usual artifice of false labels was resorted to by many parties. What tree agent has not heard the story of the Cherry currant swindle enough times to make him feel sick at his stomach? It is about as follows: 'A tree agent came around here some years ago with a picture book. The picture of the Cherry currant he showed me was so large and handsome, I thought the sort must be worth having, and ordered some plants. I took good care of them and they grew well, but the fruit proved to be nothing but the common little red currant, which I already had. He gave my neighbors the same treatment. I believe I won't buy anything in your line to-day.'

"The introduction of the Clapp's Favorite pear afforded another opportunity to fleece the public, which was not lost by unscrupulous parties in the trade. Many nurserymen published it in their catalogues when they had no stock, and the usual consequences followed. The new variety was reported to be a cross between the Bartlett and Flemish Beauty. Of course years elapsed before many purchasers found out they had not the 'product of nature' they bought.

"The Golden Queen strawberry was another swindle. It was advertised and sold extensively under that name as a new sort, but was soon identified as the ancient variety, Trollope's Victoria.

"Several years ago, one of the introducers of the grape named Empire State told me 'thousands and thousands of vines had been sold by other parties for that variety which were not genuine.' This 'product of nature' came from seed of Hartford Prolific pollenized by Clinton, by J. H. Ricketts, of Newburgh, N. Y., who is reported to have received $4,000 cash for the entire stock of the

variety. The late H. E. Hooker, nurseryman at Rochester, N. Y., who had ample opportunity to estimate the cost of the originator's experiments in obtaining the variety, told me he thought he had not profited by its sale.

"A favorite trick of unscrupulous parties in the trade is to substitute Queen of Prairie rose for some new, rare variety under the name of the latter. The former makes strong plants, which give satisfaction when delivered. The variety being a 'product of nature, it is not desirable that anyone should have a monopoly in its sale.'

"The Early Rose potato is reported to have been disseminated without the consent of the producer, and as a consequence he did not obtain compensation for it. Being a mere 'product of nature,' there was no law by which he could obtain redress.

"The number of synonyms by which most of our popular fruits are known in different sections of the country, as recorded in Downing's work on fruits, shows that the right of a free-born American horticulturist to re-name an old, well-known variety and perchance swindle the people by such means, has not been neglected. Many seedsmen have made a practice of re-naming vegetable seeds. 'Being a prod—,' but methinks I hear some reader say, cease to iterate that phrase, I pray. I suspect it would be more correct to say, the improved new variety in most instances is the result of the skill and labor of man acting jointly with nature.

"The idea entertained by many persons that the American people have always obtained such productions *free*, is like that of the tramp who walks many miles a day under the impression he is not working. A large part of the population have paid amounts which aggregate millions for plants of celebrated new varieties without obtaining them. Again, they have paid millions for worthless novelties which perchance many did obtain.

"How can these evils be remedied? By a law making the trial of all new varieties at the experiment station compulsory before allowing them to be introduced, in order to determine if they are really new and have merit. Further, the law should guarantee to the originator that in case plants or cuttings of the variety are stolen from him or the experiment station and disseminated in that way, the stock shall be confiscated wherever found. The principal inducement for stealing new varieties, so frequently practised, would then no longer exist. In addition, the originator should be given the exclusive right to disseminate his production under the name. This would give him the opportunity to remunerate himself, which is now lacking, and he in turn would protect the people in its purchase in order to protect himself in its sale."—The National Nurseryman.

The Princess Louise apple in the nursery has endured the very severe past winter without injury, and can therefore be classed as ironclad, in the mountains of North eastern Vermont. I shall look with interest for its fruit.—T. H. HOSKINS, M.D., *Newport, Vt.*

THE CONSERVATION OF WATER FOR ORCHARDS.

HE following paper, by Prof. I. P. Roberts, was prepared for the fruit-growers of western New York, but the doctrine it contains will be found of general application :

Water carries all of the food of plants and animals into circulation and all excreted material out of circulation, so there cannot be abundant growth and vigorous healthy life without there is an abundance of water always present in the tissues of growing organisms. Most living plants contain from seventy-five to ninety-five per cent. of water, but, notwithstanding the great need of plants for a liberal supply of water, the soil may easily contain so much as to injure or even destroy them. Superfluous water in ordinary cases may be carried off by surface and underground drains, but the problem of supplying water cheaply to plants when there is a lack, is a difficult one.

In most localities in the Eastern and Middle States, surface irrigation is found to be impracticable (1) on account of lack of water, and (2) because on many soils surface irrigation injures the land. Clay lands, unless most thoroughly underdrained, become puddled, sour and reduced in productive power when thus irrigated. Only on certain classes of soils, usually found in arid countries, does surface irrigation become fully successful. Sub-irrigation is the ideal method, but it is so expensive that it can only come into use where large amounts of very valuable products can be secured on small areas.

With few exceptions, all cultivated plants have to depend on the water stored in the soil. How to make a great store-house for water in the soil without saturating it, and how to get the water near the surface for the use of the plant without letting it escape during dry weather, are, therefore, subjects of prime importance to every plant-grower.

An acre of soil one foot deep will weigh about 1,600 tons, and may contain, when in good condition for growing crops, thirty-two per cent. of water, say, 500 tons or 4,000 barrels per acre. If the soil is too compact or too loose, not more than half this amount, sometimes not more than one-quarter, will be contained in the interstices of the land. Soils vary greatly in their power of holding water without being saturated. A friable clay loam has the power of storing water to a much larger degree than heavy clay or loose sandy soils. Heavy rains in the fall or spring tend to puddle the land—that is, fill the interstices which are between the particules or molecules of earth, thereby diminishing to a great extent the storage capacity of the land. Often about the only object of deep culture is to overcome the effect produced by heavy beating rains and to enlarge the capacity of the soil for holding on to moisture. There is a large amount of water stored in the first twelve inches of the surface soil, and we know that a large additional amount is found in the subsoil. In some cases it is far more than is found in the surface soil, although usually that is not the case.

The question arises, how to make the best use of and how to conserve this stored-up water, which finally contains all the nutritious material which enters into the circulation of the plant. Thin seeding assists materially in the conservation of moisture. Plants usually suffer in the middle and latter part of the summer, when they are trying to produce fruit. If too many plants are growing upon the surface the land will already have been robbed of its moisture before the fruiting season, and a failure to produce satisfactory seeds and fruits is inevitable.

Another method of conserving moisture is to shade the land, but if this is done with growing crops, as clover and the like, the amount of water which is evaporated from the leaves is greater than that which is conserved by the shading. So, where the object is to conserve the moisture for the use of the tree when it is fruiting, it is not wise to have growing crops in the orchard.

Mulching of the soil with straw or other coarse material cannot be practised in any large way, and, therefore, little dependence can be placed on this method. In bearing orchards this should be done, if at all, about the last of June. The conservation of moisture by surface cultivation has been found eminently suc cessful. The enlarging of the capillary tubes at the surface prevents the water from rising; the loose upper layer shades the land and keeps it cool, thereby preventing to a large extent surface evaporation.

Some experiments conducted during the winter in a warm room out of the direct rays of the sun, gave the following results :

1. On plots cultivated about one and a half inches deep, less water by 2,000 pounds evaporated daily from an acre of soil than from plots of a similar character and under identical conditions, which had not surface culture. 2. On a heavy clay soil the evaporation from the cultivated plot in a day was 4,000 pounds less per acre than from the uncultivated plot. 3. On a clay loam evaporation was 4,400 pounds less in a day. 4. On a light garden soil it was 2,500 less than on the cultivated plot per acre than on that which was not cultivated.

It will readily be seen what a vast influence the daily cultivation had on the moisture of the soil. Some experiments conducted several years ago with a mixture of equal parts by weight of salt and plaster applied to the land at the rate of 4,000 pounds to the acre, conserved the moisture of the first four inches to the amount of fifteen tons of water per acre—that is to say, the soil which had been treated with this mixture contained, about two weeks after the mixture had been sown, fifteen tons of water per acre in the first four inches more than the adjoining plots which were not treated. This amount of water, it is true, is not large, but it was large enough during a drought, when the experiments were conducted, to furnish enough extra moisture to the growing oats to be easily discernible by the growth of the plant. There is not the slightest doubt that a weekly surface cultivation of orchards, from June until the last of August, helps materially to save the water in the soil, while at the same time culture sets free

plant-food and keeps the lower strata of the soil cool and moist. Wherever the conditions do not forbid surface cultivation it should be practised extensively in orchards, for the threefold purpose of preserving moisture, preparing plant-food and shading that portion of the soil which is occupied by the roots of the growing plants.

COMMERCIAL FERTILIZERS FOR THE ORCHARD AND GARDEN.

The Value of Fertilizing Ingredients in Raw Materials and Chemicals.—

	1894. Cents per pound.
Nitrogen in ammonia salts,	19
" " nitrates,	14½
Organic nitrogen in dry and fine ground fish, meat, blood, and in high-grade mixed fertilizers,	18½
" " " cotton-seed meal, linseed meal and castor pomace,	15
" " " fine ground bone and tankage,	16½
" " " fine ground medium bone and tankage,	15
" " " medium bone and tankage,	22
" " " coarse bone and tankage,	7
" " " hair, horn-shavings and coarse fish scraps,	7
Phosphoric acid soluble in water,	6
" " soluble in ammonia citrate,	5½
" " in fine bone and tankage,	5½
" " in fine medium bone and tankage,	4½
" " in medium bone and tankage,	3
" " in coarse bone and tankage,	2
" " in fine ground fish, cotton-seed meal, linseed meal, castor pomace and wood ashes,	5
" " insoluble (in am. cit.) in mixed fertilizers,	2
Potash as High Grade Sulphate, and in mixtures from Muriate,	5
" " Muriate,	4½
The manurial constituents contained in feedstuffs are valued as follows:	
Organic Nitrogen,	15
Phosphoric acid	5
Potash,	5

—B 51, Mass. Exper. Station.

COLD STORAGE.

OLD storage is quite an important provision for some of our fruits The Bartlett pear, for example, ripens so rapidly that it must be handled quickly and with extreme care, or great loss will result. Even cherries and berries could be handled to better advantage if kept in a temperture of say 40 until shipping time. The ehief obstacle is the expense of the erection of such a house with all proper appliances for the regulation of the temperature. Very few of our growers have a sufficiently large business to warrant their undertaking such an expense, but it is possible that a plan of co-operation could be devised by which several growers could combine and build a cold storage house large enough for the needs of all. Or another plan might be adopted by which some one with capital would build a good sized store house, and rent space to others at a reasonable price per month. This latter plan might prove a good investment, for the direct advantage to the shipper would be so great that he would not hesitate to engage space needed for his choicest fruit.

Mr. A. H. Benson, of New South Wales, says he has been quite successful in cold storage. The system adopted afforded a nearly even temperature, with a constant influx of cold air. The ventilation was so perfect that there was never any strong odor of fruit or any condensation of moisture on the fruit or cases. The average temperature of the room for the whole period was 41.70 degrees. Only twice did the thermometer register less than 38 degrees and only nine times above 45 degrees.

Apples kept without any appreciable loss for over four months, and after being taken out of cold storage they remained sound for ten days. Among other varieties of pears which were easily kept was the Winter Nelis, which kept for over two months in perfect condition, and when removed from cold storage, ripened and developed its full flavor. All the solid flesh varieties of plums kept well for two months, even when not wrapped. Most of the varieties of peaches kept only about two weeks without deterioration, though wrapped and packed in ventilated cases. It is stated that apples keep equally well if the temperature exceeds the average temperature of this experiment by as much as 10 degrees, but that all the other fruits require the low temperature. Before removing fruit from cold storage the temperature of the cold chamber should be raised to that of the outside air.

The Number of Bearing Fruit Trees in the Province is set down as follows in bulletin 92 of the Ontario Agricultural College (in round numbers) —7,000,000 ; pear trees, 521,000 ; plum trees, 700,000 ; peach trees, 521,000 ; cherry trees, 518,000 ; grape-vines, 2,223,000.

REMEDY FOR THE POTATO SCAB.

LATE bulletin of the Michigan Agricultural Experiment Station gives the results of some experiments in the use of Bordeaux mixture and of corrosive sublimate as preventitives of the potato scab. Inasmuch as this scab has been causing much injury to the potato in many parts of Ontario, it has seemed to the writer that a brief summary of what is known in regard to this fungus would be of interest to the readers of the CANADIAN HORTICULTURIST, taken in large measure from the above-mentioned bulletin.

The germs of the scab fungus will remain in the ground in sound condition for some years, hence it is not wise to plant this vegetable in ground that has yielded scabby potatoes.

The germs also retain their vitality when scabby potatoes have been fed to animals, hence the manure from such animals should not be applied to land in which it is designed to plant potatoes.

Sound potatoes, that are free from scab, planted in ground not infested by the scab fungus, will yield a clean crop, but if there is a possibility that spores (or germs) of the fungus may be on the seed potatoes, or in the ground, then the seed should be prepared for planting by immersion in the fungicide mentioned below.

Very scabby potatoes so treated before planting, if planted in uninfested ground, will yield a crop nearly free from scab. Potatoes having a very thick skin seem to be less easily injured by the scab than those that have a delicate skin.

Corrosive sublimate is the best remedy known at present. It should be used in the proportion of two ounces to sixteen gallons of water. It dissolves most quickly in hot water. Two gallons of hot water will dissolve two ounces of the sublimate, and when dissolved, the fourteen gallons of cold water should be added. Rain water is to be preferred, but not absolutely necessary. No metal vessel or utensil should be used ; always use one of wood, glass or earthenware.

The seed potatoes should be clean, no clay or dirt adhering to them. For convenience in handling small quantities, they may be put into sacks and immersed in the corrosive sublimate solution. They should remain in it an hour and a half. Longer time in the solution may somewhat lessen the amount of scab in the crop, but it lessens the yield, while a less time—say only one hour—does not sufficiently lessen the scab. The best results, when the freedom from scab and quantity of crop are considered, are obtained by soaking the seed not less than an hour and a quarter, nor materially more than an hour and a

half. After the seed is taken out of the solution it should be spread and dried then it is ready for cutting and planting.

This treatment not only makes the crop more salable but also increases the yield.

If it is desired to soak more than twelve bushels of potatoes in the sixteen gallons, it will be necessary, after the twelve bushels have been treated, to add three-quarters of an ounce of corrosive sublimate dissolved in enough water to restore the quantity to sixteen gallons, in order to maintain the solution at the proper strength.

Corrosive sublimate is cheap, worth about one dollar per pound. The treatment should not cost for material more than two cents per bushel of seed. It is also a powerful poison. The liquid remaining after soaking the seed should be poured out where it cannot soak into wells or streams, or in any way get into the food or drink of men or animals.

Toronto. D. W. BEADLE.

To Grow Squashes.—Squashes must have a warm soil which should rather incline to a stiff loam. High meadows grow luxuriant vines and large-sized squashes, but the quality is inferior, and they are extremely poor keepers. Squashes like all other garden truck must be supplied with large amounts of plant food. A heavy manuring should be thoroughly incorporated into the soil at the time of plowing. The soil should then be thoroughly hardened and hills struck out not less than 8 ft. apart, and for the stronger growing varieties 10 ft. is none too far. From 500 to 700 lbs. of phosphates per acre should be scattered around the hills and mixed in the soil. In planting the best plan is to drop eight or ten seeds to a hill. When all are germinated these may be thinned out to three or four. After the second hoeing from 500 to 600 lbs. more of phosphate should be scattered between the rows, thus providing abundant food during the growing season. Hills struck out in regular rows may be cultivated both ways and much hand hoeing saved. Hilling squashes is now looked upon as being an old-fashioned style of cultivation, and level culture is the mode now generally practiced.

How to Select for Seed.—Every tomato grower should select for seed those tomatoes that have the particular qualities that he desires. The prevailing opinion that some kinds of tomatoes are more resisting to disease than others has a foundation in fact. In selecting the tomatoes they should be taken from healthy, thrifty plants that have borne a good crop of fruit in the proper season. The different test show that the selecting of the first ripe fruit does not tend to increase the earliness of the progeny. Let it be stated again that the plant in its general looks and form of fruit has more influence over the future crop than the shape, form, etc., of the individual fruit.

HOW THE APPLE TREE GROWS—II.

ET us consider what an acre of apple trees will probably take from the soil in producing the woody frame work, also the fertilizing constituents needed to produce the annual crop of fruit and foliage. Suppose we estimate the weight of the trunk and branches of an average tree at 1,000 pounds, which is only a rough guess, and that we have 70 of such trees on an acre. These, on the basis of the calculation we have given, will have taken from the soil to produce their wood growth about 2 to 3 pounds each of nitrogen, or 140 to 210 pounds in all, and not more than 10 ounces each of potash and phosphoric acid, or about 44 pounds of each of these elements for the full acre. As this is the entire consumption of these important constituents of the soil during the whole period of the life thus far of the acre of orchard, for its wood growth, this small proportion can be easily supplied by the poorest soil without severely taxing its capacity. It is, indeed, wonderful that so great a growth can be brought about with so small a consumption of fertilizing material. This may well serve to lessen the astonishment one often feels at seeing a thrifty and vigorous forest tree growing in the crevice of a rock where it would seem that but little nourishment could possibly be had from the small quantity of soil available to its roots.

As the leaves of the apple tree are always allowed to fall on the ground, where they gradually decay and are returned to the soil, the full quantity of fertilizing constituents they take from the land need not be considered here. It will be a fairly liberal estimate if we take half the quantity as requiring to be replaced. I know of no estimate which would guide one in ascertaining the approximate weight of leaves on a full-sized apple tree, but supposing we guess it at 100 pounds, we shall then consider the fertilizing ingredients which enter into the composition of 50 pounds of apple leaves for each of the 70 trees. These taken at their maturity will be found to contain about 31½ pounds of nitrogen, 14 pounds of potash, and about 7 pounds of phosphoric acid.

Supposing the crop to average annually two barrels per tree, each barrel containing 120 pounds of apples, we should have for the seventy trees an annual production of 16,800 pounds, which would take from the soil yearly about 19 pounds of nitrogen, 8½ pounds of potash, and less than 1½ pounds of phosphoric acid. Adding to the fertilizing constituents required for the fruit those necessary for the production of half the annual crop of leaves, we have :

	Lbs.
Leaves, nitrogen	31½
Fruit, "	19
Total	50½

Leaves, potash	14
Fruit, "	8½
Total	22½
Leaves, phosphoric acid	7
Fruit, " "	1½
Total	8½

If the fertilizers which are taken from the soil could be replaced in their original position and evenly distributed just where the exhaustion has taken place, the original fertility of the orchard could be maintained by this small annual addition. But as this is practically impossible, the returns should be much more liberal.

COMPARATIVE VALUE OF MANURES.

Animal manure varies in value from several causes. It depends somewhat on the animal from which it is obtained ; next, on the character of the food with which the animal is supplied, and more on the care given to the proper mixing of the liquid with the solid ingredients, and to the proper handling of the material. The solid excreta of sheep stands highest in value, giving per ton of 2,000 lbs. nitrogen, 12 lbs. phosphoric acid, and 6 lbs. of potash. Swine give a manure nearly equal in proportion of nitrogen and phosphoric acid, with about 10 lbs. of potash per ton. A ton of the solid portion of horse manure contains about 10 lbs. of nitrogen, 7 lbs. of phosphoric acid and 6 lbs. of potash, and the same quantity of cow manure 6 lbs. of nitrogen, 5 lbs. of phosphoric acid and 2 lbs. of potash. The liquid constituents of the manures of the horse and cow stand much higher in regard to some ingredients, and contain in each ton from the horse 24 lbs. nitrogen, and 30 lbs. of alkalies largely potash, and from the cow 16 lbs. nitrogen and 28 lbs. of alkalies. Hence the statement given by Storrs may be regarded as fairly reliable, that 15 tons of good half rotted stable manure will supply to an acre of land about 150 lbs. of potash and 140 lbs. of phosphoric acid. The nitrogen in this quantity of manure would probably average from 200 to 250 lbs. One such dressing every five years, with the occasional plowing under of a crop of clover or peas to furnish additional nitrogen, should fully supply the waste which the constant cropping with apples would cause. If barnyard manure cannot be had, the waste of nitrogen may be entirely returned by the more frequent plowing under of crops of clover or peas, or the nitrogen may in part be supplied more directly and promptly by giving the orchard a dressing of 200 lbs. of nitrate of soda to the acre, which quantity will at once supply about 31 lbs. of nitrogen per acre in a form immediately available. The potash taken from the soil may be returned to it by an occasional dressing of unleached wood ashes, which contains from 6 to 8 lbs. of potash in every 100 lbs. Unleached wood ashes also contain about 2 lbs. of phosphoric acid in each 100 lbs.

Thus, by plowing under a crop of peas or clover every second year, the orchardist may return to the soil the nitrogen his crop has taken. Ten hundred lbs. of unleached wood ashes per acre would fully restore the potash used during the same period, and about half the phosphoric acid, while the deficiency in this latter article could easily be made up by an application once in three or four years of 300 or 400 lbs. of superphosphate of lime per acre.

I trust I have succeeded in making clear to you the important facts I have endeavored to present, and that you will ever bear in mind a maxim, the truth of which should be impressed on the mind of every fruit grower and every farmer—feed the soil and it will feed you.—PROF. SAUNDERS, before Nova Scotia Fruit Growers.

Remedial Use of Apples.—Chemically the apple is composed of vegetable fiber, albumen, sugar, gum chlorophyl, malic acid, gallic acid, lime, and much water. Furthermore, the German analysts say that the apple contains a larger percentage of phosphorus than any other fruit or vegetable. The phosphorus is admirably adapted for renewing the essential nervous matter—lecithin—of the brain and spinal cord. It is, perhaps, for the same reason, rudely understood, that old Scandinavian traditions represent the apple as the food of the gods, who, when they felt themselves to be growing feeble and infirm, resorted to this fruit, renewing their powers of mind and body. Also, the acids of the apple are of singular use for men of sedentary habits, whose livers are sluggish in action, those acids serving to eliminate from the body noxious matters, which, if retained, would make brain heavy and dull, or bring about jaundice or skin eruptions and other allied troubles. Some such experience must have led to the custom of taking apple sauce with roast pork, rich goose, and like dishes. The malic acid of ripe apples, either raw or cooked, will neutralize any excess of chalky matter engendered by eating too much meat. It is also the fact that such ripe fruits as the apple, the pear, and the plum, when taken ripe and without sugar, diminish acidity in the stomach, rather than provoke it. Their vegetable sauces and juices are converted into alkaline carbonates, which tend to counteract acidity.—North American Practitioner.

Pruning.—In the last report of the American Pomological Society, a writer on pruning, protests against this dreadful violation of nature, maintaining that every branch cut off is an attack upon the vitality of the tree, and an injury to it—I have not the volume at hand to refer to it. In a drier climate, trees may make less wood, but in this country, keeping wood-growth in check, by disbudding, pinching off and removing superfluous wood is imperative to fruitfulness. I have had trees twenty years old, absolutely barren and worthless, until half, or more than half, of the wood had been removed, that were thenceforward annual bearers. With fruit trees, the object sought is not timber or firewood, but fruit, and this can only be attained by limiting wood-growth.—Ex.

THE PEAR LEAF BLISTER.

WE have several times received from subscribers in various parts of our province, samples of pear leaves having black corkey spots upon them, and these were either a mystery to the senders, or else supposed to be either leaf blight, or scab. After consultation with Prof. Fletcher, of the Central Experimental Farm, we were able to reply that the cause of the trouble was a minute mite, Phytoptus pyri belonging to the same order (Acarina) as the cattle tick, and the itch spider. Fig. 671 shows an adult mite, greatly magnified. Indeed, these mites are so small that they cannot be seen without a glass, and to study their structures a first-class microscope is necessary.

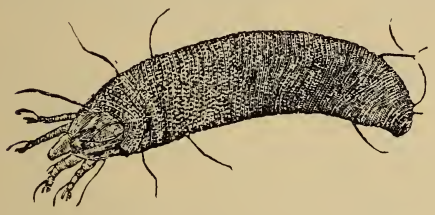


FIG. 671.

Bulletin 61 of the Cornell Experimental Station, gives a most excellent account of this mite, written by Prof. Slingerland. To give an idea of their diminutive size, he says that it would take 150 of them placed end to end, and 600 side by side to measure an inch. These tiny mites winter underneath the outer scales of the buds, fifteen or twenty having been found underneath a single bud scale. Thus situated, they are ready for mischief early in spring.

The diseased portions of the leaves are really galls, produced by these mites, and within them the eggs are deposited; they are quite easily distinguished from the fungus spots, by their blister-like corkey appearance. Fig. 672, from the bulletin referred to, shows a highly magnified section of a pear leaf through one of these galls, *g*, showing gall; *n*, *n*, normal structure of leaf; *o*, opening of the gall; and *e*, eggs of the mite.

FIG. 672.—GALL BLISTER MITE; RED STAGE.

Later in the season the galls dry and turn brown or black, and are more conspicuous on the lower side. The leaf in the mean time has shrunk to its normal thickness, as shown in Fig. 673, in which *g* is gall, *n n*, uninjured portion of leaf, and *o*, opening to gall from under side.

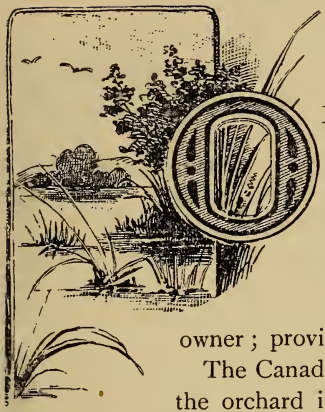
FIG. 673.—GALL OF BLISTER MITE, DRY STAGE.

Various remedies have been experimented with, but the most successful one, according to Prof. Slingerland, is a thorough spraying in winter with kerosene emulsion diluted with from five to seven parts of water. Apply from every side, so as to reach all autumnal buds, for it is about them the blister mite is most abundant.

Bee-keeping and Fruit Growing.—The bee industry is to be commended as a complementary necessity to successful fruit growing. Many of our grapes are not self-pollemizing. Some of our pears are of the same deficient nature. All fruits are more or less dependent on bees to carry pollen from one to another. I have no doubt but the possession of a small house of bees in the orchard will be worth thousands of dollars to a man who grows half a dozen or more acres of fruit. Some years the need of this help is not so great as in others; but there are years when our fruit crop is lost for lack of pollination. The year 1890 was of this sort; but that year I saw two small orchards loaded with apples; each orchard had a few hives of bees. The cold rains prevented any general and extensive aid from insects until it was too late. This co-operation of industries is of vital importance. It holds the key of the situation. A complete home ought to include the production of nearly all that we need for food and comfort and clothing. In reality we waste, or allow to go to waste, a large part of the natural products of our land. Honey making as an industry should not be separated from fruit and flower growing, or from general farming. The art is easily learned, and in a family of six persons there will generally be found one who finds especial pleasure in bee culture. Fruit, flowers, and honey are a perfect and natural combination of industries.—American Agriculturist.

Constant Cultivation.—In Southern California the apple orchards are cultivated and irrigated about the same as the orange groves, resulting in an abundance of fruit. Belleflower apples raised in this way are twice as large as those raised in Maine. and equally as fine flavored, if not superior. Irrigation in New England is not so much needed, of course, as it is in Southern California, but in dry seasons it would be a great benefit. It would save the dropping of fruit from drouth, and enable the trees to bear larger and more perfectly developed fruit. If the surface in our apple orchards were kept cultivated but not planted to crops, the ill effects of severe drouths could be guarded against, to a great extent. By keeping the surface often stirred the pulverized soil of the surface would act as a mulch and prevent the soil beneath from drying up. By cultivating the surface lightly after each rain, the evaporation from the soil would be checked to such an extent that the orchard would not suffer for want of moisture, even in severe drouths. In our Northern States we seldom have drouths lasting more than six weeks, so that by cultivating the surface soil after each rain, the orchard would be materially protected from very dry weather.—American Agriculturist.

SEASONABLE HINTS.



Weed Destruction.

F all farms the fruit farm should be the best cultivated and most presentable to visitors. There is a great deal of monotony about visiting farms devoted to grain, but the successive plantations of apples, pears, peaches, small fruits, etc., in endless variety, are a constant and unfailing source of interest to the visitor, and satisfaction to the owner; providing he is able to give it proper care.

The Canada thistle is one of our troublesome weeds, but in the orchard it can usually be destroyed by mowing in the blowing season. Where a field is badly overrun, there is no better plan than plowing them under in blooming time. Stray thistles may be destroyed by the spud, a chisel-like blade, about eight inches long attached to a handle about five feet long.

But more troublesome than the Canada thistle is the Burdock; for, though it may be easily destroyed, it matures its seed at a very busy season on the fruit farm, and its burrs are so easily entangled in the horse's manes and tails, and in the hair of the dog, that if neglected, it is soon widely distributed. Many people are satisfied by simply mowing them off, or cutting with a hoe at the surface, a useless method, because the crown will send two stalks out for one cut off, and these will mature the seed burrs. The seeds themselves have great vitality, and if once shed upon the ground, will spring up successively yearly. Perseverence, however, will finally conquer. They must be cut off every year well beneath the surface of the ground, in order to destroy the crown, from which fresh shoots would spring. The spade will answer for this work, but the spud is the best tool, and must be faithfully used.

Treatment of Peach Leaf Curl.—Peach Leaf Curl is caused by a fungus known to mycologists under the name of *Exoascus deformans*. It is widespread both in Europe and America, occurring to a greater or lesser extent in all regions where the peach is cultivated. It is often noticed on nursery stock and upon young orchard trees, causing the loss of nearly all the foliage in severe cases, and upon bearing trees the dropping of the first fruit. The "curl" is usually limited in duration to the period of growth when the young leaves are most tender. After the foliage has matured the attack is not continued. It manifests its presence as soon as the first leaves appear, and runs its course by the end of June or while active growth is taking place. Affected leaves even-

tually shrivel and drop, giving the tree a defoliated appearance. This disease is closely related to the fungus which causes the bladder-like growths on plum trees called "plum pockets." Nothing definite is known as to the method by which this fungus is propagated and carried over from year to year, but it is supposed that the mycelium or vegetative portion remains dormant in the young shoots and leaf buds, and develops with the beginning of growth in spring.

This disease is easily and effectively treated by preventive measures if applied in time. Spray with copper sulphate, 1 lb. to 25 gallons of water before the buds start in spring. Follow this with Bordeaux mixture, using 4 lbs. of copper sulphate and 4 lbs. of lime to a barrel (45 gallons) of water just before the blossoms open, and repeat this application a week after the blossoms have fallen. When the season is cold and wet, as the present one has been, another application some two weeks later will be advisable. It will pay to spray whenever the disease appears, although the earlier applications have been neglected. —J. CRAIG, in Montreal Star.

Lumber Wagon Springs are an important article in fruit growing sections. In the height of the season when apples, peaches, pears, grasses, blackberries, etc., are all to be carted to the railway station or local landing, our ordinary market wagons are entirely too small, and we must either buy more wagons, or make more frequent journeys. The lumber wagon lies idly by, except when used for teaming barrels of apples or pears, and these even are often much damaged, while being shaken about over rough roads. The consignee will complain, but the shipper positively declares he put them up in good condition, little dreaming of the evil results of the rough usage he has given them.

FIG. 674.

A bolster spring has been invented, which will serve a good purpose in converting a common wagon into a spring vehicle for transporting fruit, and yet raise the box very little. It is easily adjusted and inexpensive, and fruit growers will, no doubt, take advantage of them.

WINDOW-BOXES FOR FLOWERS.

IN the city, where it is impossible to have a garden, there may still be quite a substitute for it in the form of a window-box, and this substitute may be enjoyed by the occupants of upper stories as well as by those living on the ground floor. A window-box that will grow plants quite as well as the elaborate and expensive boxes used by wealthy people, will cost very little. The box should be as long as the window is wide, or a little longer, and about a foot wide and a foot deep. Fasten it level with the window sill, or just below it. For support use iron brackets, which can be screwed to the wall just below the box, or by braces of wood running from the outside of the bottom of the box to the wall, set at such an angle that ample support will be provided. A few nails can be put through the box into the sill or side of the house, to give additional security and firmness. Any boy ten years old can put the box in place, i you furnish him with a saw, a hammer and some nails to work with. Packing boxes of about the right size and shape can be bought at many of the dry-goods stores for a small sum.

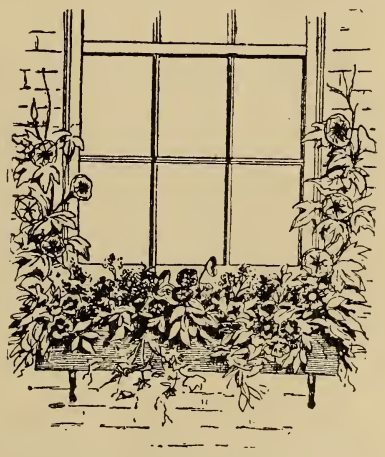


Fig 675.—A Pretty Window-Box.

When in place, fill it with the best soil you can get—the richer the better; but if you cannot get such soil, use whatever is at hand and depend on soap-suds and the like for food for the plants. The best annuals for use in window-boxes are: For flowers—petunias, phlox, calliopsis, sweet alyssum and nasturtiums; for fragrance—mignonette; for training up and about the window—morning glories. Among other good plants, not annuals, geraniums, both double and single, are excellent; also verbenas, heliotropes, and roses of the ever-blooming class. If I wanted a window-box that would be as near perfection as possible in the beauty and fragrance of its bloom, I would have a *Perle des Jardins* rose—rich yellow and very sweet; a few dark purple and a few pale yellow, white, and sky-blue pansies, a heliotrope, some mignonette to droop over the sides of the box, a rose geranium, and morning glories at the ends to train up over the window. You would not be likely to get as many flowers from such a selection as you would from annuals, like those named above, but what flowers you did get would be so choice, so exquisite in color, sweetness, and form, that

you would find them more satisfactory if you are at all fastidious in this direction. From such a window-box one can cut a dainty button-hole bouquet every day during the season, if it is carefully cared for; and what could be lovlier than a yellow rose-bud and a purple pansy, with a geranium leaf, or a cluster of pale yellow, white and blue pansies, unless it is a Perle rose, just opened wide enough to give you a glimpse of its golden heart, with a cluster of lavender heliotrope?—American Agriculturist.

Begonia Rex likes warmth, shade from bright sunshine and a moist atmosphere, but not to be wetted much overhead; also a light, porous soil, extra good drainage and rather limited pot room. It thrives well as a pot or basket plant, and may be set aside on a stand or planted in the ground in a somewhat shaded place in summer. It may be kept rather, but not quite, dry in winter. *B. metallica* being of upright, bushy habit requires richer soil than *Rex*, and should be kept in active growth in winter as well as summer: otherwise the above conditions suit it too very well.

Whitewashing with the Spraying Pump.—The use of Bordeaux mixture in the spraying pump suggests that the machine can be used to good purpose in spraying whitewash upon greenhouse roofs, barn basements and fences. We now apply all the whitewash upon our larger glass roofs by means of a pump and nozzle. The whitewash is made in the ordinary manner, of lime and water, and is diluted to about the consistency of cream. If a large surface is to be covered, especially if it is difficult to reach, a direct delivery nozzle, like the Boss or a common discharge nozzle, is used, and the operator stands several feet away. But if it is desired to cover the surface evenly and neatly, the McGowan nozzle is most satisfactory.—Ex.

Skins of Fruit.—The skins of fruit should never be eaten, not because they are not palatable or digestible or are unhealthy in themselves, but on account of the danger arising from microbes which have penetrated into the covering of the fruit. Everybody has noticed that at times a slight scratch will create a considerable sore on the human body. It is generally ascribed as an unhealthy condition of the blood, but a close microscopical examination will show that it is due to the presence of microbes thus introduced into the system. So with an apple, a peach, a pear, or a grape. The fruit may be perfectly sound and healthy, but on the skin or covering may be microbes, which, introduced into the human system, will breed disease. These germs are not uncommon, neither are they always present. It is possible to eat this covering without injury, but the danger is such that it is best not to incur the risk.—St. Louis Post-Dispatch.

PRUNING HEDGES.

WHEN pruning hedges, as well as in the pruning of other trees, it should not be forgotten that the ultimate effect of all pruning is to weaken the growth power of the plants. This is evident to any one who will consider the effect of pruning a hedge. Though the plants may be 20 years old, it is seldom that the plants in the hedge rows will have stems thicker than one's wrist; while if the same plants had been suffered to grow up as trees they would have trunks of three or four feet in circumference. Applying this principle to pruning in general, no young tree should be touched for some years unless with the evident object of keeping it small and dwarf; and in the treatment of hedges especially, the young plants set out should not be touched until they have acquired great vigor of growth. In setting a hedge of osage orange, for instance, the plants should be suffered to grow as they will, for two or three years, according to the richness of the soil and the vigor of growth; and after they have achieved this extra vigor, they should then be cut to the ground in the winter season. The result of this is that very strong and vigorous shoots then push up, and these can be trimmed into the form desired, during the next growing season; and for hedge purposes, the form should always be that of a truncate cone. The object of this form of training, is to allow every leaf to have the full benefit of sunlight, which they cannot have when the hedges are trimmed perfectly upright and flat on the top. Hedges trimmed in this latter way, soon get bare of foliage at the base; while hedges trained conically, always retain their strength and foliage clear to the ground. In pruning trees, the same principle prevails. If a large tree be headed off severely, it seems to throw out a few very strong branches; and the impression might be given that this was an evidence of the strength of vital power; but the reason for this strength is that the new branches with their numerous leaves avail themselves temporarily of the large supply of food stored up in the trunk. But these same leaves have to store up food for another year, and it is impossible for the comparatively few leaves—no matter how strong these shoots may be—to furnish sufficient food for the enormous number of cells which require nutrition. As a consequence, numbers die of absolute starvation, and rotten portions appear in every direction. Large trees so pruned, consequently, soon become hollow from decay, and very often die within a few years; or; if they live at all, are never healthy. Lengthy chapters might be written on the minute details of pruning, without telling more of general principles than has been given in this paragraph.—Meehans' Monthly.

HARDY OR HYBRID REMONTANT ROSES.

OR these grand flowers the preparation of the soil is the same as for the monthly roses. Autumn is undoubtedly the best time to plant them, more particularly where large plants dug from the nursery rows are to be used. Amateurs perhaps would be better pleased with plants on their own roots, and which are usually grown in pots and can be planted at any season from May till October inclusive, rather than budded roses from the open ground. While not generally so large the first season as the usual budded stock, are very attractive when in bloom and continue to increase in size and abundance of bloom each year after. The great value of own root plants over budded stock is that with very little care they last for years, in fact some varieties will live twenty-five to fifty years, while with budded stock often the stock will send up suckers from the base, which by many are thought to be rose shoots, and if not quickly removed they will soon take all the nourishment from the rose proper, which soon dies.

The varieties in the following list are given in the order of their merit, and they combine about all the colors to be found in this class, ranging from pure white through the different shades of pink, rose, red and crimson:

Mrs. John Laing, clear deep pink, extra free.
Mme. Gabriel Luizet, satin-like pink, beautiful glossy shade.
Queen of Queens, bright shade of rose pink.
General Jacqueminot, bright crimson.
Coquette des Blanches, white, very fine.
Baroness Rothschild, delicate shaded pink and white.
Earl Dufferin, bright crimson.
John Hopper, bright clear rose.
Anna de Diesbach, deep rose, very free.
Paul Neyron, extra large deep rose.
Merveille de Lyon, white shaded with pink.
Gloire de Margottin, the clearest bright red yet introduced.
Prince Arthur, in the way of General Jacqueminot, but much freer.
Prince Camille de Rohan, often called "Black Prince," extra fine dark maroon.
Countess of Oxford, bright carmine, very free.
Captain Christy, clear flesh pink.
Magna Charta, deep reddish rose.
Caroline d' Arden, soft delicate rose.
Mabel Morrison, white.
Ulrich Brunner, cherry red, fine in spring only.
Mme. Plantier, white, fine for hedges.
Lady Helen Stewart, bright crimson.
Marchioness Dufferin, clear rosy pink, very fine.
Margaret Dickson, clear white, extra fine.
Barthelemy Joubert, crimson.

—Gardening.

Our Experiment Stations.

NOW that we have four experiment stations in full operation, we wish to introduce them and the experimenters who superintend them, to our readers, and ask for their full sympathy and co-operation, in order that the results may be of the greatest possible value to the Province. The stations and experimenters are :

Winona, M. Pettit, specialty, grapes ; Trenton, W. H., specialty apples and pears ; Leamington, W. W. Hilborn, peaches and strawberries ; Craighurst, G. C. Caston, apples.

As each of these gentlemen have had a large number of varieties of their special fruit in test at their own expense for many years, there is no reason why we should not at once receive some benefit from their past experience. They have agreed to send an occasional contribution to this Journal, during the summer, and in the fall will make a full report for the benefit of the public.

All originators of new fruits, are invited to send plants or trees to one or all of our experiment stations, in order to have a reliable test made and the result published as early as possible. Careful records and descriptions will be made, and published, with actual size of fruit, quantity produced per tree, health and vigor of plant, market value of fruit, etc.

APPLES AND PEARS TESTED AT TRENTON EXPERIMENT STATION.

I SEE many different opinions of the same apple, given in different districts. A great deal is said in favor of the *Canada Baldwin ;* am sorry it does not succeed with me, subject to spot ; more so than the Snow ; it has been fruiting seven years, and has been only clean one year. It is of fine flavor, productive and attractive, when clean.

Winter St. Lawrence will be a profitable apple. It is larger than the Fall St. Lawrence and of nearly the same appearance and flavor but, not so subject to crack and spot ; hardy and a good grower.

Mountain Beet and Mountain Tulip are more subject to spot than any other varieties yet fruiting.

La Rue seems to be nearly as late coming into bearing as Spy. It is a very upright grower, but the fruit was not desirable last year. It may improve as it gets age, or is grown on different soil.

Hubbardston Non-such is a very profitable apple ; more so than any other variety on light gravelly soil. It keeps through January and February.

Pewaukee is a large fine apple more productive than the King and as good.

It requires rich soil ; the fruit is subject to drop prematurly, the same as Fallawater.

Ontario is one of the most profitable apples we have. The tree is hardy, but bears too heavily to make much growth. My Ontario apples sold equal to Spys in Montreal.

Primate is a very desirable early apple for a small orchard on account of its uneveness in ripening, commencing to ripen with Red Astrachan and lasting through October. It is an excellent cooker and dessert apple ; also *Seacliff's Hawthornden*, which can be grown in the same space as a currant bush. The fruit is large, round, lemon-colored, of good flavor and a good cooker.

PEARS.

One of the most profitable pears grown here is Doyenne Boussock. It is not so early a bearer as Bartlett, but a more healthy tree, and not so subject to blight. I have only seen one tree blighted yet. It ripens after Bartlett.

Mount Vernon is also healthy and productive. The fruit requires to be handled with great care to get it into market in good condition ; a slight bruise will cause it to spoil in a short time.

Anjou is one of the finest winter pears. The tree is healthy, but a shy bearer. I consider *Josephine* and *Lawrence* the most profitable of winter pears tested here, both heavy croppers and of fine flavor, but they are not so attractive in the market as Anjou.

Urbaniste is slow in coming into bearing, but is a very fine pear.

W. H. DEMPSEY, *Experimenter.*

Trenton Experiment Station.

The Salome Apple.—In 1884 the Salome apple was introduced to the public by Arthur Bryant, Princeton, Illinois, with high claims for superiority ; the tree excelled in hardiness, having a large, thick, leathery leaf, with wood as tough as the wild crab ; it bore an annual crop, fruit extremely uniform, always of good size, could not be blown from the tree ; keeping qualities unsurpassed, and according to some of the testimonials crisp in flesh, and peculiarly agreeable in flavor up to June and July.

In April, 1884, I planted twenty Salome trees ; fourteen lived to mature, having made a feeble growth only, leaf medium in size, and *thin* rather than "thick and leathery." The first fruit was borne in 1892, three specimens only ; I send you herewith the largest, it weighs exactly one ounce. Evidently the Salome of the West undergoes a strange transformation when transported to the East.

Yarmouth, N.S. CHAS. E. BROWN.

GRAPES TESTED AT OUR WINONA EXPERIMENT STATION.

AT the Winona Experiment Station, in the County of Wentworth, I have planted, this spring, for testing, 48 varieties of grapes, 28 of peaches, 18 of cherries, 22 of plums, 23 of strawberries, 9 of currants, and a few gooseberries, raspberries and blackberries. Of grapes that I have previously tested I will now refer to a few that have some good qualities, to commend them.

August Giant—A very large black grape of fine appearance, and good quality. It ripens with the Concord ; is too tender to ship well.

Amber Queen—A handsome red grape, good-shaped bunch ; quality good, fairly productive.

Adirondac—A fine amateur grape of the highest quality, vine requires winter protection.

Agawam—One of the best as referred to in last number of HORTICULTURIST.

Brighton is a cross between Concord and Diana Hamburg, and shows the Hamburg in both form of bunch and flavor. It is a valuable early market grape.

Catawba has been profitable with me. It always sells higher than any grape in the market ; it requires close pruning to prevent overloading.

Champion has been, and is still, a very profitable grape ; its extreme earliness and productiveness are its only good qualities.

Creveling is valuable for home use ; it is early, good quality, and will hang on the vines and improve in flavor until frost.

Diana is a good grape for winter use, and makes a very choice wine.

Duchess, a good flavored white grape, flesh tender, free from pulp, sweet, spicy and rich, would be valuable if we had no Niagara,

Delaware always commands the highest price if properly grown ; it requires close pruning, rich soil, and good cultivation.

El Dorado, is one of the finest flavored grapes in existence ; good for amateur ; not productive enough as a market grape.

Eumelan—Early, good flavor, and productive.

Goethe (*Rogers' No. 1*)—Large, fine flavor, pink or red when fully ripe, hardy and very productive.

Herbert (Rog. No. 44) is one of the best black Rogers in appearance, flavor and productiveness.

Iona and *Jefferson*, are both handsome red grapes, of good quality, but ripen late ; suitable only for favorable localities.

Lady is a fine early white grape, of good quality ; vine rather slow grower, but very hardy ; it should be suitable for the north.

Lindley (Rog. No. 9), is one of the most profitable of all grapes that I have grown and one of the finest in appearance and flavor.

Massassoit (Rog. No. 3), the earliest of Rogers' grapes, good quality; does not fertilize well, is improved by planting alternately in the row with a good blooming variety.

Moore's Early, a good early grape, but not quite productive enough.

Niagara is far the most profitable white grape.

Moore's Diamond is a promising grape, good quality, fine appearance, and early.

Moyer is profitable, principally on account of its extreme earliness.

Requa (Rog. No. 28), a large compact bunch, good flavor; productive; resembles the Salem in appearance.

Wilder (Rog. No. 4) is one of the best black grapes for market, and holds its flavor with long keeping better than any other grape.

Worden, very much like the Concord, of which it is a seedling, but sweeter and better in flavor, and a few days earlier, which makes it one of the most profitable.

M. PETTIT, *Experimenter.*

A New Grape—SIR,—I should be glad to hear through the columns of the Journal, from Mr. Broderick, St. Catharines, the originator, as to the success of his new grape, Augusta, exhibited by Ontario at the World's Fair, I have had numerous inquiries in reference to it, from the United States as well as Canada. I only received three bunches. They were compact and fine, but all were required to fill the jar, so that I had no opportunity to test their quality. How did they succeed in 1893? Are the vines hardy and productive, and what is their season of ripening?

Grimsby. A. H. PETTIT.

The Acker.—A remarkable contrast to the Salome is the Acker, a Wisconsin seedling of Oldenburg. Planted the same date, April, 1884, the trees have made the strongest growth among eighty varieties; they began bearing in 1890, and have borne annually since, a crop of large, handsome apples, which keep until mid-winter, although, like the parent tree, they drop badly in October.—C. E. BROWN, *Yarmouth, N.S.*

Cole's Prolific Raspberry.—In reply to a query from Prof. Crozier, of Michigan, regarding Cole's Prolific raspberry, which was shown in the Ontario fruit exhibit at Chicago, we may state that this variety was a chance seedling growing wild and found by Mr. Cole, of Port Dalhouise. This gentleman has since cultivated and propagated the variety because of its peculiar habit of production of fruit along the cane from top to bottom. It may be worthy of

e sting.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE DIANA GRAPE.—The name of the introducer of this grape, page 194, should read "Mrs. Diana Crehore," and not "Castore," as printed.

THE CUMULATIVE RESULTS of spraying are worthy of consideration. A row of Whitesmith gooseberries at Maplehurst, was sprayed thoroughly in 1893, with Bordeaux mixture, excepting one bush. This year the whole row was sprayed, and all were clean except this one bush, the fruit of which was unfit to gather.

SPRAYING, to be of any real benefit, must be done more faithfully than usual. The first applications must be made early in the season—the Bordeaux mixture must be made with good quality of lime, the pump must be a good one and the nozzle of the proper kind. These conditions observed, and first-class fruit will surely result, unless the soil is poor. The results of the experiments at Grimsby are becoming more and more marked, and a good report may be expected later on.

AN INTERNATIONAL EXPOSITION OF FRUIT CULTURE will be held in St. Petersburg, Russia, under the auspices of His Majesty, the Czar, beginning Sept. 22, and closing Nov. 12th, 1894. The object will be to shew the present condition of Horticulture in Russia, and in other countries.

The exhibition will comprise the following sections:

(1) Fresh fruits; (2) fresh vegetables; (3) dried fruit and vegetables,

preserved or treated by other processes; (4) wine, cider, perry, and other fruit beverages; (5) hops and medical herbs; (6) seeds; (7) fruit trees and shrubs; (8) horticultural implements and appliances, and technicality of production; (9) literary, scientific, and educational accessories, collections, plans, etc.

A Congress of Pomologists will be convened simultaneously with the exhibition. Those desirous of taking part should apply to officers of International Exhibition of Fruit Culture, 1894, St. Petersburg, Imperial Agricultural Museum, Fontarka, 10, Russia.

DECEASE OF COL. JOHN MAGILL.—Early last month we received from Mr. Wm. Adams, of Oshawa, news of the death of Col. John Magill, who has for many years been a prominent member of our Association. He held the position of Director from 1873-1876 inclusive, and in the latter year was one of Canada's representatives in charge of the fruit exhibit at the Centennial. Col. Magill was born in Paisley, Scotland, and came to Canada with his parents at the age of six, when the country about Oshawa was all forest. Fruit culture has always been a hobby with him, and this led him to become a member of our Association. His death was brought about from an accidental cut in the foot, which produced blood poisoning. He was in his eightieth year.

THE BENEFITS OF SPRAYING WITH BORDEAUX MIXTURE are plainly visible in the orchards of A. H. Pettit and E. J. Wolverton. Nearly all the fruit is dropping from the large and beautiful apple orchard belonging to the latter, excepting from those trees which have been used for the experimental work by Prof. Craig. These have a fair quantity of fine, clean fruit, and the foliage is a dark green healthy color, which will enable the trees to lay up strength and vigor for future years of fruit-bearing. Similar good results have attended experiments with the cherry. Many varieties, such as Gen. Wood, Rockport, Bigarreau, Napoleon Bigarreau, etc., are each year growing worse with Monilia, a cherry rot. Two trees of each kind, standing side by side, were taken for experiment, and the sprayed tree is full of clean, ripe fruit, the other is full of rotten cherries and black leaves.

THE FRUIT PROSPECTS.

As so often happens to the fruit grower, the wonderfully bright prospects of a month ago, have now entirely changed, and an almost utter failure of some fruits now confront him.

The Apple Crop, which, a month ago promised a full crop, and, indeed, promised better than any season during ten years past, has almost entirely dropped from the trees in many localities. It seems to be a rule that when long continued cold, wet weather is succeeded by a hot drouth, such as we have lately experienced, the fruit is apt to be blasted and drop to the ground. In addition to this, that which holds on is more severely attacked with scab than ever. Possibly the mycelium was growing in the cell walls during the wet weather, and as soon as the excessive heat came, it suddenly burst forth, and ruined the crop, causing both leaves and fruit to drop, as if burned by Paris green. Only those which have been thoroughly sprayed with Bordeaux mixture, and often, have escaped with anything like a crop of fruit.

Pears seem to have escaped the scab, and show a finer crop than usual, especially the Duchess and the Bartlett.

Grapes were ruined in many places by the severe frost of May 28th, but in Southern Ontario, where not injured, the prospect is good.

Plums, where not well sprayed with Paris green or shaken for the curculio, are very badly stung, and the crop much injured.

Peaches are a fairly good crop on young, healthy trees, but old trees are much blighted, owing to the severe change above alluded to, and the crop almost ruined.

Cherrics have largely dropped from the trees owing to the same cause.

Currants, gooseberries, raspberries, and blackberries seem to be unusually loaded with fruit.

Taking it all in all, the immense crop which the early bloom led us to expect, will not be realized, but only a very moderate crop indeed. The result will favor those who have even a small crop, for prices will be certain to be remunerative under the circumstances.

We give extracts from some of the letters received.

Southern Ontario.

M. BURRILL, St. Catharines, Lincoln Co., reports: *Sweet cherries*, 60 % of a crop, but a great deal of rot. *Sour cherries*, of the common red I cannot speak, but E. Richmond has a full crop. *Currants*, red and black, 8. *Peaches*, early, 70; Crawfords, 75; Barnards and Smocks, 80. *Plums*, Lombard and Imperial Gage, 75; choice varieties, as Washington, Yellow Egg, etc., light. *Pears*, Bartletts, 60; Duchess, Clapp, etc., 40. *Grapes*, Looking well and appear to be setting a fairly good crop. *Quinces*, 80; no sign of rust yet. Of apples I cannot speak very definitely, as I have so few trees, but I fancy the crop will not be an extraordinarily heavy one in this district. *Raspberries* look well and promise 70.

Rot, Fungi, etc. The season has been particularly favorable for the development of the various fungi. There has been a wholesome enthusiasm shown on the subject of spraying in this locality, but owing to the long wet spell in May and the early part of June, experiments could not be carried on so satisfactorily as in ordinary seasons. The curled leaf of the peaches has been worse than for some years. The shot-hole fungus has also been somewhat troublesome. It is too early yet, of course, to speak of plum and peach rot or fungous diseases of the grape.

Insects The curculio has been exceedingly bad during the last two weeks. Earlier in the season the cold wet weather kept them comparatively quiescent, but latterly they have been working very vigorously, especially on plums and peaches The small Paria beetle, which affected the raspberry crop so injuriously two years ago, has not been very prevalent in this locality.

MR. W. H. WYLIE, Virgil, Lincoln Co., writes: Apples were affected by the bad weather in May and are not so abundant as early in the season seemed probable, but are a much better crop than last year. Many apple trees are losing some of their leaves—they turn yellow and drop off. The fruit is a good deal spotted by the fungus.

I would estimate the percentage about as follows: Peaches, 100; pears, 75; cherries, 60; apples, 40; plums, 100; grapes, 75; strawberries, average; raspberries and other small fruits, average.

MR. A. G. HEAVEN, Oakville, Halton Co., writes: Raspberries, red and black, promise an abundant crop, and blackberries have blossomed heavily. Plum trees which bore heavily last season are bare this, but some trees have set fruit well, but owing to heavy rains just before and after blooming time, spraying has not checked curculio as usual, and fruit is badly bitten. Apples in most orchards are suffering in the foliage badly from some sort of blight, especially Greenings and Russets, and are not likely to yield a large crop. Grape vines, in some cases, are badly crippled by the Grape Vine Flea Beetle and its larvæ. Many of the not numerous peach trees grown here promise a very respectable crop of fruit.

MR. W. E. WELLINGTON, Toronto, York Co., writes: I find that cherries are about 50% of a crop; currants, full crop; gooseberries, 60; raspberries, 90. Cherries are not in the slightest affected so far with rot; gooseberries not affected with the mildew.

Taking central and northern Peel County, I find that the prospects for fruit are uniformly good. Strawberries, full crop; currants, 75, not damaged by frost, but the shortage is due to rankness of foliage; gooseberries, 100; cherries are not grown extensively, having been killed by black knot.

York County: Strawberries, 90; currants, gooseberries and raspberries, 100, and cherries ranging from 50 to 75. Some slight damage by frost; no mildew.

MR. T. H. PARKES, Woodstock, Oxford Co., writes: The grape crop in this district was completely destroyed by frost the latter part of May, and the strawberry crop was also damaged by the same cause. The grape vines are again covered with new foliage, which is being riddled by a small black slug or worm, something like a snail.

MR. W. W. PATERSON, Oakville, Halton Co., writes:—Summer apples, 25%; winter do., 10; plums not over 50, and perhaps a good deal less; pears, poor crop; raspberries badly winter-killed, could not give percentage.

MR. J. R. HOWELL, Brantford, Brant Co., writes:—Since I reported to you on the fruit crop, there has been quite a change. Apples, pears and plums set very full and there never was a better prospect for a heavier crop, but owing to the heavy frost which came the latter part of May, which caused these fruits to drop, I think the crop will not reach above 20 or 25%, with the exception of Astracan and Duchess, which bid fair for a good crop; cherries a fair crop; strawberries and currants, I think I am safe in saying, will not reach over 40; gooseberries and raspberries, not above 50; and grapes not above 25. Therefore, owing to so much rain and frost, the outlook of all kinds of fruits is not very encouraging.

MR. M. PETTIT, Winona, Wentworth Co., writes:—Apples light, cannot tell at present what proportion of a crop, unsprayed badly injured by fungus; pears a fair average, injured to some extent with fungus; plums, 80%, rotting some; peaches a very full crop; grapes promise fair at present for a full crop.

MR. JOHN MITCHELL, Leamington, Essex Co., writes:—The apple crop seems better back away from the lake shore—less fungi. The Baldwin shows up best with us, and next the Yellow Transparent, but all varieties dropping fast, and many trees are now quite barren. Grapes have a full crop; peaches good; Early Richmond is our best cherry. People here are planting more cherries and plums.

Middle Ontario.

MR. SIMON ROY, Berlin, Waterloo Co., writes :—Contrary to expectations, the apple crop throughout this (Waterloo) county is comparatively a failure, in so far as winter varieties are concerned. Baldwin, Spy, B. Orange and Greening blossoned profusely, but the last frost, which although very slight, did great damage. Almost all the Russians and a few other early varieties carry good crops, especially the Duchess. Leaf-blight has affected many varieties ; this is rather a new disease to me ; I presume this is likely to spoil Snows and other varieties subject to spotting. The cherry crop is fair for the number of trees planted, and are principally of a large sized Guigne, which reproduces seedlings varying but little in size and color. The better class of cherries do not seem to succeed here. The pear crop is scarcely worth noticing ; the once-celebrated Flemish Beauty which has been extensively planted here, is about played out ; a large number of the trees have been killed by blight, and the fruit has become so rusty as to be valueless ; Bartlett and Louise Bonne bear fairly well. The crop of strawberries was fairly good and present appearances indicate that currants and raspberries will turn out satisfactorily. Plums look well, at least what has been left on the trees ; the curculio has done extensive damage and was hard to ward off this season.

MR. J. D. STEWART, Russeldale, Perth Co., writeu : Since writing you last, the excessive rains—beyond all precedent at this season of the year—has caused an unusually rank woody growth, and consequent shedding of immature fruits, particularly the larger sorts. Young bearing trees of Yellow Transparent, Duchess, Wealthy, Ontario, Baldwin, Golden Russets, and Louise Bonne de Jersey pears, which set and promised so well about a month ago, are now completely stripped of their fruits, Red Astrachan an exception. Leaf spot and apple scab becoming very common. Effective spraying rendered almost *nil*, owing to frequent thunder storms. Cherry tree foliage beginning to assume quite a yellow tinge. Grape vines, Downing and Russian Mulberries pushing aheard with great vigour, but too late, I am afraid, to replace the fine crop we expected from them previous to the damaging frost on the 28th of May. Strawberries light in yield, and somewhat irregular in form, and slightly watery. Plums dropping badly. Whitesmith and Industry gooseberries next to worthless with mildew—Pearl and Downing free from the same, and fairly well loaded. Currants in good size, limited in quantity. The right kind of weather for raspberries, and crop likely to be heavy. To sum up on a basis of 100 for full crop, would place apples at 50, pears 35, plums 25, cherries 30, gooseberries 40, currants 35. A late dry season may give us a small yield of grapes and mulberries.

MR A. MCD. ALLAN, Goderich, Huron Co., writes : At this date apples 60%, but still falling. Ontario, King, Golden Russett, Baldwin, holding best in above order for winter. Duchess, 100, scab bad ; Harvest, 30 ; Astrachan, 75. Plums not over 50, rotting badly, Washington worst. Cherries rotting badly, especially Elton, Black Heart, Elkhorn. Can't get over 25 of these. Windsor, Reine Hortense, Gov. Wood, Richmond, 80. Pears holding well, 75. Le Conte fine and clean. Currants and gooseberries are looking well, and a full crop. Raspberries also. Grapes well formed and covered heavily, but will be late. It pays to lay vines down for winter I see. A report on apples about two weeks hence will be more decisive.

MR. GEO. NICOL, Cataraqui, writes : The apple crop in this section will be about 70%. Duchess and snow full crop ; Russett, 50 ; other late varieties about the same. Plums and pears hardly any grown in this section. Grapes about an average crop. A new insect in this locality has attacked the apple, working on the new growth. The leaves turn brown and curl up, the cocoon is suspended from under side of leaves about $\frac{1}{3}$ of an inch long. Very little spraying done in this vicinity.

MR. THOS. PLUNKETT, Meaford, writes : Apples are a full crop. Plums and cherries were also a full crop, but with rot on both these fruits and curculio on plums, and with improper spraying, these fruits, I think, won't be over 60% of a full crop. This report refers to the township of St. Vincent only.

Northern Ontario.

MR. JOHN CRAIG, Ottawa, writes: Regarding the fruit crop in this district, as far as I am able to ascertain, the prospects are as follows:

Strawberries have been an extra large crop, but on account of the frequent rains the berries have been somewhat soft and difficult to ship. *Bubach* and *Beder Wood* have been the two favorites among the new varieties.

Raspberries were considerably injured last winter, but are growing vigorously and are giving promise of a fair crop.

Blackberries blossomed very full and have set fairly.

Currants and *Gooseberries* will be a large crop. English varieties, which are now being grown to a greater or less extent in this locality, were somewhat injured last winter and will not yield heavily.

Apples set very heavily, but, no doubt, on account of the excessive amount of moisture accompanied by low temperature, have dropped considerably during the past two weeks, so that the crop will not be large except on winter varieties.

Native Plums will probably yield very heavily.

Blue Plums will be a light crop.

Cherries are little grown about here, but those who have *Morellos* will probably be well satisfied with the returns.

Mr. G. C. CASTON, Craighurst, writes: In reply to yours *re.* fruit crop, would say that a great change has taken place lately in the prospect of the apple crop. It has turned out just as I feared it would. During the blossoming time, and when the pollen was ripe, a cold rain from the east prevailed most of the time, which prevented proper fertilization of the blossoms, and as a result they failed to set their fruit, or, where it did set, made a feeble attempt to grow and then fell off. Frosts which occurred about the time of setting may have had some effect also. Winter apples will not, from present appearance, be 50% of a crop. It is not easy to make anything of a certain estimate yet, however. Early apples will be much better, and may be about 80% of a crop. The fungus scab is worse than for years, and every variety that is subject to it is well dosed with it this year. Spraying was little use, owing to the almost continuous rains. All small fruits will be a full average crop.

MR. R. B. WHYTE, Ottawa, writes: *Raspberries*, when they passed through the winter safely, are a full crop. Some varieties suffered severely last winter. Cuthbert and Golden Queen, the varieties most grown here, will not be over half a crop. Herstine and Heebner were less injured, and will be about three-quarters of a full crop. Schaffer a full crop—say, an average of two-thirds of a crop. *Gooseberries.*—The American kinds are an average crop. The foreign varieties, like the raspberries, were a good deal injured—some of them killed outright. Those that escaped injury are an average crop. Some of them are affected by the shot hole fungus, but so far are not affected by mildew. *Apples* are a full average crop where properly cared for, and not troubled by either insects or fungi.

The Grape Vine Flea Beetle.

653. Sir,—I have been much troubled with the enclosed beetle on my grape vine. Would spraying destroy them? Picking them off is a difficult task.

H. Brantford, *Hamilton*

Reply by Prof. Fletcher, Ottawa.

Fig. 676. — Grape Vine Flea Beetle.

The beetles sent by Mr. H. Blandford, of Hamilton, which were attacking his grape vines, are the Grape Vine Flea Beetle, *Graptodera Chalybea.* The best remedy is clean culture in the autumn and the removal of all dead leaves and rubbish, among which the mature beetles pass the winter. For spring treatment when the beetles attack the buds, dust them with Paris green and lime (or any other powder). 1 lb. Paris green to 25 of the dilutent.

The Apple-root Plant Louse.

654. Sir,—We set two hundred apple trees this spring, and some of them had knots on the roots. Can you give cause, and remedy?

T. E. Orser, *Chisholm, Ont*

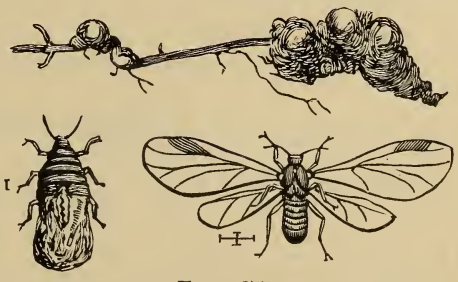


Fig. 677.

The knots are excrescences caused by the Apple-root Plant Louse, *Schizoneura Lanigera.* This insect appears on the roots as a very minute pale-yellow louse, where it sucks the juices with its long proboscis. Sometimes the maturer lice climb up the trees, when they may be easily recognized by the bluish-white cottony matter which cover them, giving rise to the name Wooly Aphis, by which they are sometimes known. The effect upon the trees will in time become serious if they are not destroyed. Prof. Saunders in his work on "Insects Injurious to Fruits" advises baring the roots as far as convenient, and dashing very hot water upon them. Trees being transplanted may be dipped in water not exceeding 15° Fahr.

Raspberry Cane Borer.

655. SIR,—Can you give me any information regarding the worm that destroys the raspberry stalk. BROWER.

FIG. 678.

Our correspondent probably refers to the raspberry cane borer, Oberea Bimaculata, Fig. 678, from Saunders' Insects Injurious to Fruits, shows the full-grown beetle, and renders a description here unnecessary. It is one of the long-horned family (Cerambycidæ) and immense family numbering some 4,000 species, many of them destructive borers, which live and burrow in wood of plants and trees, *e.g.*, the Locust tree borer, *Clytus Robiniæ*, Fig. 679, the apple tree borer, *Saperda Candida*, Fig. 680, etc.

FIG. 679.

The perfect beetle flies about during this month, and the female deposits her eggs in the tender part of the growing tip of the raspberry cane. She first checks the rapid growth of a portion of the cane, to make the place more and more secure in which to deposit an egg; and this she does artfully by first girdling the cane in two places, and then thrusting her eggs in it about midway between the rings.

When the young larva hatches out it burrows its way down the centre of the canes, continuing its destructive operations until about the end of August, when it pupates and remains until the following June, when the beetle gnaws its way out, to repeat the round its parent has done before it.

FIG. 680.

This insect may easily be kept down by a little watchfulness for the affected canes will droop and wilt, and if cut below the part affected and burned, they will give little trouble.

Raising Cranberries.

656. SIR,—Would you kindly give me all the information you can on this subject—the best soil, and whether vines or seeds are planted, and where they can be purchased?
H. BRUNEL, *Nelsonville, Ont.*

This fruit is not grown at all in this vicinity, and, indeed, we do not know of any place in Ontario where it is cultivated to any extent, but in Massachusetts it is largely grown and the profits are reported to be large.

Boggy or marshy soils are usually selected, and these are thoroughly drained. An important condition is that a sure supply of water can be had at any emergency to cover the whole bog. The first step in the preparation is the thorough drainage of this bog so that all water can be drained off during the summer

season for the growth and perfection of the berries. It can then be flooded from time to time as may be necessary, to destroy insect pests, to irrigate the soil, or to protect the vines in spring and fall from sudden frosts. During the winter time the vines are covered with water for winter protection. You will see from all this how important it is to have a good water supply from some reservoir or mill stream. The next point of importance is a supply of coarse sand, free from loam and other impurities, that will be accessible to the bog. After the drains are completed, the bog is covered with five or six inches depth of sand. The object in covering is to keep out all foul stuff. The vines are set in several ways, usually in hills. The tools needed are, first, a marker, second, a spud for making the holes, and third, a dibble for setting the vines. The vines should be fresh and thrifty, and kept moist in water until planted. The hills should not be less than eighteen inches apart each way, and the vines will quickly send out shoots and runners to cover the ground. Careful cultivation must be given the first two years of growth, and in the third year there should be a first-class crop of berries. The average yield is 150 bushels per acre. In Massachusetts the water is drained off in the spring, about the 15th of May, but care is necessary to protect from frost until the 10th of June. The green berries are very susceptible to frost, but become more hardy as the fruit matures. Therefore, a frost early in September may be harmful, while the same amount of cold two or three weeks later might have little effect. The picking is done by hand, at a cost of 40 or 60 cents a bushel. The proper preparation of a cranberry bog is said to cost about $2 an acre, but the yield gives a fair return for the money invested. Should you require further information, we might refer you to White's "Cranberry Culture." For vines you might inquire of J. T. Lovett Co., Little Silver, N. J., U.S.

The Scab—(FUSICLADIUM DENTRITICUM).

657. SIR,—The foliage of my apple trees is dropping off as if they had an over-dose of Paris green, and they have had none. Would you consider it prudent to spray them with Paris green, or would you advise me to take the chances of injury by the colding moth. J. H. BIGGAR, *Winona.*

The dropping of the leaves of your apple trees is no doubt the result of the prevalence of the apple scab. The season of hot weather succeeding the very wet weather has developed this fungus very rapidly in all orchards of southern Ontario. In such orchards as have not been treated with the Bordeaux mixture, the scab is likely to ruin this year's crop entirely. Possibly, if they were sprayed immediately with Bordeaux mixture, the fungus could be checked, and the fruit, might then become fairly presentable. You could add three or four ounces of Paris green to every forty gallon of water containing Bordeaux mixture with perfect safety, as the lime in the Bordeaux prevents any injury by the Paris green.

The Windsor Cherry.

658. SIR,—Is the Windsor cherry of good quality?

E. B. EDWARDS, *Peterboro'*.

It is counted an excellent variety. It originated at Windsor, and was introduced to the public by Messrs. Ellwanger & Barry. It is thus described by that firm: Fruit, large, liver-colored, resembling the Elkhorn, nevertheless quite distinct, ripens three or four days after that variety; flesh, remarkably firm and of fine quality; tree, hardy and very prolific; a very valuable late variety.

Plant Louse on the Spruce.

659. SIR,—I enclose some twigs of spruce, showing some insects which infest the spruce trees on my lawn. They have, for the last two seasons, stripped the branches, making the trees look badly, and destroying their symmetry. Can you tell me what it is, and the remedy?

E. R. CARPENTER, *Collingwood*.

Reply by Prof. Fletcher, Ottawa.

The insect is a species of plant louse, which I am unable to recognize from the specimen sent. It is, however, very similar, if not identical, to a species which has done much damage at times to white pines. This we have treated quite satisfactorily with the kerosene emulsion, diluting the ordinary Riley formula, which has been published in the HORTICULTURIST, with fifteen parts of water to one of the emulsion.

Clearing a Lawn of Ants.

660. SIR,—How can ants be got out of a lawn or terrace? FLIP.

Several remedies for this evil have been suggested. Air slacked lime, plentifully dusted over their hills and other places infested, is one; another is, four ounces of quassia chips, boiled in a gallon of water about ten minutes, and four ounces of soap added to the liquid as it cools, and this well sprinkled about their nests and ruus. A remedy much commended is to stick a match, phosphorus end down in the holes they make; as a result the ants immediately clear out.

Spraying.

661. SIR,—Does spraying injure trees? FLIP.

That depends upon what mixture is used. Paris green, if too strong, injures the trees; while Bordeaux mixture is a great benefit, for it prevents fungi from growing upon the foliage or plant.

WILDER.

THE

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THE WILDER GRAPE.

EVERY year it is becoming more and more a question with the fruit growers, which he should rank first in importance, quality or productiveness, when he is planting for profit. The Concord grape for instance, is one of the most productive varieties that grows, but its quality is second-rate, and consequently the market price is every year tending downwards. Last year many growers had to content themselves with 1¼ to 1½ cents a pound, a very low figure in consideration of the care of the vineyard, the trellising, harvesting, and purchase of baskets. Should this tendency continue, there will soon be no profit at all in growing such varieties. But with grapes of such excellent size and quality as the Wilder, there is no danger of low and unremunerative prices. By common consent this grape is counted one of the most showy of American out-door black grapes, for exhibition purposes, and one of the best for dessert purposes.

At Maplehurst this grape has not been largely planted for market, because it is somewhat subject to mildew and rot, and is not always productive. But since we have learned so well the benefit of using copper sulphate in our vineyards to destroy the fungi, there is no reason why we should not henceforth plant this variety more freely. To get the best results it should be trained on the renewal system, having two arms of old wood on the first or lower wire, and training the young growth upward. Every year the alternate uprights are to be cut out to the bud nearest the old wood, and those left will bear freely.

The Wilder, or Rogers' No. 4, was raised by Mr. E. S. Rogers, of Salem,

Mass., and it is counted one of the best of his numerous hybrids, being not only large and beautiful in fruit, but the vine is also vigorous, hardy and productive.

The following description is from the Bushberg Catalogue :—

Bunch large, often shouldered, sometimes weighing a pound; *berry* large, globular; *color* dark purple, nearly black, slight bloom; *flesh* tolerably tender, with a slight pulp, juicy, rich, pleasant and sweet. Ripens with, and sometimes earlier than the Concord, keeping for a long time. The vine is vigorous, healthy, hardy, and productive; roots abundant, of medium thickness, straight, with a smooth, moderately firm liber; canes heavy and long, with well-developed laterals. Wood firm, with a medium pith.

BEN DAVIS APPLE.

THE second annual meeting of the Southern Illinois Horticultural Society was held in Fairfield, Feb. 17th and 18th. The attendance was very good, about two hundred, notwithstanding the absence of many on account of the prevalence of sickness, and the lateness of the meeting. Hereafter the meetings will be held earlier, probably some time in January.

There was much local interest in the meeting, as the people of the surrounding country are thoroughly aroused to the matter of planting apple orchards for profit.

The Ben Davis is decidedly the leading favorite, and more largely planted than all others combined. In fact, it is safe to say that about 90 per cent. of all the trees being planted are Ben Davis.

There are some parts of Southern Illinois where the Ben Davis is not the best apple to plant. It the extreme south part of the State along the Ohio River, the Winesap does phenomenally well, the tree being a fine grower and bearer, the fruit large, fine and of excellent quality, and a good keeper. The Ben Davis in this part of the State ripens too early to be a winter apple, hence, most of the plantings consist of Winesap. In some parts of the northern part of Southern Illinois the Jonathan does exceedingly well, and being an apple of excellent quality and not largely grown, it brings a better price than Ben Davis, and is always ready sale, so in some parts it is being planted largely by some planters.

That the Ben Davis is not the best apple in quality, was generally admitted, and an apple having all the good characteristics of the Ben Davis, with better quality added, would be hailed with delight and generally planted. But the large orchards now being planted in Southern Illinois are put out for the purpose of making money, and past experience has proven that for this purpose no other apple now generally tested can compare with it.

GRAPES FOR TABLE AND EXHIBITION PURPOSES.

A WRITER in American Garden gives the following as his choice of grapes for table use and exhibition purposes, viz.:

For table quality only. Red—Brighton, Lindley, Delaware and Catawba. White—Duchess, Moore's Diamond, Eldorado and Prentiss. Black—Herbert, Worden, Concord and Amenia.

For exhibition only. Red—Brighton, Jefferson, Salem and Gœthe. White—Niagara, Lady Washington, Irving and Duchess. Black—Wilder, Concord, Worden, Highland and Telegraph.

Notes on the Varieties.

Reds.—Brighton I look upon as the best, provided it is not allowed to become over-ripe; it is not a good shipper, and has a very thin skin which breaks easily; it is a large showy grape and one of the finest in quality. Lindley is not so showy in the bunch, but the berries are very large, and it is a good keeper and shipper; I claim this to be the best flavored, although many concede that quality to the Delaware. Delaware is smaller than either of the above, but is considered a first-class grape. Catawba is a well-known grape, very showy and late in ripening. The others are all among the earliest in the red section.

Whites.—Duchess is the finest white grape grown, considering all points, and has been so decided by several horticultural societies. Its meaty flavor partakes of the nature of a foreign hot-house grape. The bunches are very compact, and in damp weather, when the rain gets into them, are apt to crack. Bees also pick into the fruit after rains have started. If it can be ripened during a dry spell it will prove a good keeper; have kept it until January. Growing in bags tends to preserve the fruit, and Mr. Corby's method is to cut each bag open at the bottom. Moore's Diamond (new) is a fine grape, quality good, skin more tender then Duchess. The public are not generally acquainted with this variety. Eldorado—No white grape finer in quality, but it bunches loosely; keeps well. Prentiss—A very good grape, smaller than the Niagara but of much better quality; apt to over-bear; to remedy this fault it is necessary to trim closely and thin out the bunches.

Blacks.—Herbert is a very large, showy grape, a good keeper and the best flavored; much better in every respect than Concord; it, however, requires more care (being a hybrid), and is worth it; if the people who want good grapes realized its superiority to the Concord they would quickly substitute it. It does not always bear so abundantly as Concord. It was obtained from the European Black Hamburg crossed with the wild Monmouth. Worden—A fine grape in quality, but very thin-skinned and not a good shipper; better flavored than Concord, of which it is a seedling. Concord—Everybody knows,

or is supposed to know. Aminia—Is of very fine quality, approaching Herbert closely; it is smaller in the berry, but carries more berries than Herbert, making a showy bunch; its shipping qualities are not so good.

For Exhibition Only.

Reds.—Jefferson, one of the finest in quality, very large, showy and compact bunches. Mr. Corby has exhibited bunches weighing 1¼ pounds. Salem—Is a very large and showy grape, and is one of the largest of the Rogers; it bears a larger berry than the Brighton. Gœthe—Has a very large berry; does better in the South, being a late grape, although in protected places it does well here; needs to be trimmed closely.

Whites.—Niagara is a very showy grape, and a prolific bearer. The berries of Lady Washington are not so large as those of Niagara, but the bunches are larger and very showy. Irving makes a large bunch, and in appearance is much like Niagara, fully as large, but later, and of fair quality.

Blacks.—Highland is first for size and the largest of our black grapes; late in ripening (about the 25th of September). Wilder—A first-class grape, large in bunch and berry, and one of the hardiest of the Rogers' varieties; bunches often weigh one pound. Telegraph makes a large compact bunch of medium quality; ripens early, about September 1st.

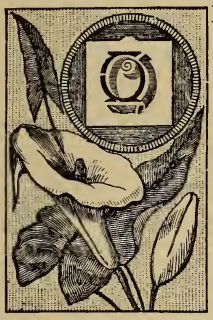
AVERAGE YIELDS.

Estimates of the probable returns per acre of the various fruit crops are by no means uniform. This arises from the various conditions in which growers operate, which give immensely divergent results. The publication of extraordinary results, without qualification, is misleading, and has the tendency of leading persons to engage in fruit culture with exaggerated notions of the profits, and afterward to meet with disappointment.

The following estimates by an Iowa fruit grower, are quite reasonable, and therefore we publish them, hoping our readers will give us items from their own experience, either corroborating or criticising them:

Strawberries	1st crop, 2nd year,	3,500 quarts.
Strawberries	2nd crop, 3rd year,	2,000 quarts.
Raspberries	1st crop, 2nd year,	1,000 quarts.
Raspberries	2nd crop, 3rd year,	2,500 quarts.
Raspberries	3rd crop, 4th year,	2,500 quarts.
Raspberries	4th crop, 5th year,	2,000 quarts.
Raspberries	5th crop, 6th year,	2,000 quarts.
Blackberries	1st crop, 2nd year,	500 quarts.
Blackberries	2nd crop, 3rd year,	2,000 quarts.
Blackberries	3rd crop, 4th year,	3,000 quarts.
Blackberries	4th crop, 5th year,	4,000 quarts.
Blackberries	5th crop, 6th year,	4,000 quarts.

A VISIT TO THE LEAMINGTON EXPERIMENT STATION.



ON Friday, the 15th of June, Professor Hutt and the writer visited our Experiment Station in Essex Co. Leamington is prettily situated on the shore of Lake Erie, but rather inconvenient of access by rail. The soil in that vicinity is mostly light sand, and well adapted to the cultivation of the peach, but the peach growing section is very limited. The farm of Mr. W. W. Hillborn is situated in the heart of this favored locality, and is being almost entirely devoted to the cultivation of the peach and strawberry. Of the latter he has about six acres in full bearing, and has already tested more than one hundred varieties. Of the kind now in cultivation, he prefers for market purposes, Bubach 24, Williams, Wilson, Saunders and Woolverton. As an early berry, Mr. Hillborn prefers the Beder Wood to Michel's Early, because it is just as early and much more productive, and for a late berry the Parker Earle, which is about as productive as Bubach 5, and is a fine showy berry. The plants have peculiar habit of growth, not spreading as much as other berries, but keeping well in hills. For a table berry the Governor Hoard is good, having an extra fine flavor. The Middlefield is not a good market berry. The foliage is very healthy and beautiful, but does not endure drouth very well. One sample of this variety that we picked measured one and five-eights inches in length by one and three-quarters in breadth. But Mr. Hillborn's great specialty is in the cultivation of the peach. He has already planted about sixty acres of this fruit, and is to plant out about fifty acres more in the spring of 1895. When planted, his will be the largest peach orchard in Canada. He has laid out his orchard in a systematical way, in the manner of the streets of a town. The large drives or streets are thirty feet in width, and the blocks contain five hundred trees each, with twenty rows in each block. His plan is to number the block, then the rows and the trees in each row. His record book then will enable one to find at once any variety in any part of the orchard. The light sandy soil of this locality, which is very dry and naturally well drained, though rather too light for strawberries, is exactly suited to the cultivation of the peach. This fruit seems scarcely ever to fail to produce a crop. It was stated by one of the fruit growers in that section that there had not been more than one or two total failures during the past fifteen years. The greatest inconvenience is in shipping; on account of the connection it is difficult to reach the markets of Toronto, so their principal shipments are made to Buffalo, London, Detroit, Sarnia and St. Thomas.

Mr. Hillborn's method of protecting his trees from the peach tree borer is worthy of notice. To thirty gallons of water he adds equal parts of lime and ashes, about one bushel of each; to this he adds one of crude carbolic acid.

With this mixture the trees are whitewashed, and he claims that this will be a perfect protection.

Adjoining Mr. Hillborn's farm are two other fruit farms which we visited with considerable interest. One of them belongs to Mr. John Mitchell, who has about twenty-five acres in fruit, and about ten of these in peaches. The variety which he has planted most largely is the Yellow Albridge. He has also planted the Crawford, Tyhurst Seedling, and numerous other varieties. His orchard is remarkable as an example of shortening-in. He heads his trees about a foot and a half from the ground from the very first. He goes over his trees every year, in the month of June, with his shears pruning off about one-half the young growth. This applies to them the same principle that is often recommended for pruning grapes, namely, pinching off the young shoots, leaving two or three leaves beyond each bunch of grapes. In the same manner Mr. Mitchell leaves two or three leaves beyond the last peach of each limb. His trees are remarkably compact, no long straggling growth has ever been allowed, and though many of them were eight or ten years planted, they did not spread over more ground than many trees unpruned would do in half the time. He finds this method more convenient in picking, besides the bearing wood is kept in a dense head, and the tree lives to a much greater age. His apple orchard was well cultivated, ane the trees beautifully formed. He is applying the same method of shortening-in in his apple orchard that he does to the peach. When taking us to visit his apple orchard, we drew his attention to the apple scab which was beginning to affect the leaves and fruit. He was surprised, and said that it had certainly appeared within the last few days. Upon further inquiry in other parts of Ontario, we find that this fungus has suddenly appeared between the 10th and 20th of June, owing to the very hot weather succeeding the wet season. In Mr. Mitchell's orchard the Ben Davis and Greening apples are ruined with the scab, and are rapidly dropping to the ground. Otherwise there would have been an unusually fine crop. Not only were the apples falling to the ground in many orchards in Essex, but the leaves also are suddenly turning black, all the result of this apple scab. Since returning home, we have examined the apple orchards at Maplehurst, and found that where the Bordeaux mixture has been faithfully applied, there is very little scab to be seen. No doubt the present season will be a clear proof of the benefit and efficacy of copper sulphate in preventing this evil.

We have frequently referred to the fine peach orchard belonging to Mr. E. Tyhurst, of Leamington. We had the pleasure of calling upon this gentleman, and have pleasure in saying that his orchards deserve all that has ever been written about them. He has about seventy acres in peaches, and of these about forty acres are planted with the Tyhurst Seedling which, judging from all appearances, surpasses the Early Crawford as a market peach, both in value and productiveness. He plants his peach trees ten feet apart in rows, and makes his rows twenty feet apart, thus giving room for a wagon to pass down in gathering. In addition to these, he has roadways here and there, and greater in width. Probably no man in Canada has made more money out of peach growing than has Mr. Tyhurst.

FANCY FRUIT.

HE art does not belong to everyone of putting up fruit in fancy style so as to command prices above the ordinary. The first point is, of course, to produce such fruit by extraordinary care in cultivation, manuring, pruning, etc. The great importance of an attractive label should also be considered; white paper with blue lettering is attractive, and should have printed upon it the grower's name and the nature of the goods, grade, etc. This can easily be pasted on each wooden package.

Picking, grading and packing choice fruit is a work of art, and unless a man has it in him, he cannot learn it by reading. All fancy fruit should be wrapped in dainty wrappers, white tissue is best, with the grower's name in bright blue ink. How beautifully such a label will blend with the scarlet and gold of a fancy Crawford peach! Who could pass a box of peaches so wrapped, and placed in shallow crates in layers and rows, without buying them! while the same person might pass a box or basket of unassorted fruit without notice. The proper grading is best done by having a packer for each grade, and when a basketful is turned out on the packing table each one selects fruit to suit his class, as, for example, extra selected, selected and 1st class; and what remains is sold as 2nd class, if at all. A California packer gives the following as his system of grading peaches for market; and in reading observe that instead of the terms we use, he employs the primes, extras, and standards:

"Before closing I will, in as few words as possible, explain my system of grading for market. Primes, or first grades, are packed 48 to 52 to the box six by four, top and bottom, or permissibly seven by four at the bottom. They must be nearly uniform in size, so as to pack square and snug, fitted in just so tight that the filled box may be set on end without its contents falling out, this holds good moreover of each and every grade.

"Extras, or second grade, go 56 to 63 to the box, two rows of seven by four each, or, for the higher number, a bottom row of seven by five.

"Standards, or third grade, should not exceed 80 peaches to the box, eight rows of five each top and bottom; anything running smaller than this I rate as culls, to be used for domestic purposes or sale to the canner or dry house."

"JOHNNY, add seven apples to two apples, and what will you have?" "Colic, sir."—Harper's Bazar.

RASPBERRY NOTES.

THERE happens to be just now need of advance all along the raspberry line, notwithstanding the fact that we have in the last half century created the whole raspberry harvest and market. Of the older sorts Cuthbert alone, of the reds, stands well nearly everywhere. It is somewhat tender as far north as Boston and Buffalo, in exposed positions. Turner suckers beyond endurance. Shaffers is too dark and the cane rusts. Marlboro, on some soils, is inferior, and always requires good culture. Thomson is early, but small. Hansell and Crimson Cluster are decidedly unsatisfactory with me, and the same must be said of several other sorts industriously disseminated. Of the newer sorts, Muskingum belongs in the Shaffer class, but has a very solid fruit that will carry well. No one, however, will buy these berries except at very low figures. Superlative is either the same as E. P. Roe's Pride of the Hudson, or very similar. It is not suited to general culture. Champlain is a pale yellow. Caroline, however, for a home berry to be used without delay after picking, is really fine table fruit.

Among the blacks, Palmer and Kansas are excellent. But Kansas is not equal in size to Gregg. Gregg is, unfortunately, not hardy. Now what we want is a succession of berries, beginning as early as Davison's Thornless and closing as late as Gregg, and fully as large as the latter. In reds, we need a berry as large and reliable as Cuthbert, but as early as Malboro, and then a succession running on as late as Cuthbert. Marlboro, gives a standard of color, and Turner of quality. For canning I do not ask a berry better in quality than Shaffer's Colossal. But the color is not acceptable to housekeepers. It is a remarkable innovation in the fruit, however. The canes grow twelve feet in a season, and, while always killing bark, there is always a crop, and a very big one. It is a grand home berry. As a market fruit, the red raspberry is rarely ever in supply above demand. It is useless to raise it for a distant market. The local berry will always hold the local market. The red has fifty friends to one for the black.

The best remedy for a drouth is heavy mulching after spring harrowing. I run the cultivator in April, and then apply all the mulch that I can command. In the fall I gather enormous piles of leaves, these in the spring making admirable mulch. There is great advantage in growing the rows so that the bearing branches will reach out nearly to touch each other and shade the ground. Cut out old canes in September or October; then tie the new canes to wires, or rather in small bunches just below a wire stretched along posts. Then, in late October, cut off the tops with hedge shears, leaving the canes five feet high. Apply a good coating of manure, and wait until spring. In picking time the rows should present almost solid walls of berries, but if there be a lack of moisture, the upper clusters will be dried. Irrigation must ultimately be almost as common in the East as in the West.—American Agriculturist.

SUMMER PRUNING.

Summer Pruning Trees and Shrubs.—When it becomes better known how easily good shaped trees may be produced by summer pruning, there will be more of it done than there is to-day. Somehow, the idea prevails that pruning of trees should be done in winter. Fruit trees, which farmers are more interested in than they are in any others, are left to grow as they will in the summer, trusting to the saw and hatchet for the regulation of matters when winter comes. This is where the great mistake is made. The time to prune any tree to the best advantage is when it is growing freely in summer. Some few years ago I had under my care some peach trees. I had the planting of them as well as the care of them afterwards. From the first year these trees were summer pruned almost entirely. About June, when the growth was fresh, the trees were inspected and were kept in good shape by the pinching off of all the shoots that were growing out of place or too rapidly. This was done by finger and thumb. When topped in this way the side shoots pushed out, and a dozen shoots take the place of the one. The tendency of a peach tree is to make long shoots, and a tree left to itself will soon become unsightly. But when topped as described, beautiful specimens are obtained, as these trees were which I speak of. Instead of there being trees with long branches, bearing fruit only on the ends where the young twigs were, these trees were bushy from bottom to top, being well supplied throughout with young twigs, which are the ones that bear the fruit. These young shoots are the result of summer pruning, and they can be produced on all trees as well as on the peach.—Practical Farmer.

Summer Pruning Red Raspberries.—On the question of pruning there are diversities of opinion. My plan, where I keep them staked, is to do no pruning or pinching back until spring. My experience has shown that in my rich garden soil pinching off the terminals produces a rank growth of laterals, which continues so late that the wood does not ripen, and so perishes in the winter. I let them grow as tall as they choose, and in the spring, when the old canes are removed, the new ones are shortened in to about five feet and singly tied to the stakes. I leave from two to four canes in the hill. Leaving the old canes until spring furnishes somewhat of a windbreak, and I think they winter better when the pruning is thus delayed.—E. G. Fowler, in Gardening.

Trimming.—In nothing connected with the business are so many mistakes made or so much ignorance displayed of the real ends desired, or of the true nature and habits of the plant. The first year, as soon as a shoot reaches 8 or 10 inches in height, the terminal bud should be pinched off, and under no circumstances should any other cutting or trimming be allowed until the next spring. We can have but one cane, and we seek to make it as branchy and

vigorous as possible. Hence the pinching back. After the first year, no trimming whatever should be made until the following winter or early spring. This has been against the almost general practice, but it is sound, not only when tested by experience, but in theory, also. We aim to prevent winter-killing, to have the plant complete its round of growth, the wood mature, and the leaves drop, because they are ripe, and not from frost. There are from four to eight canes, and these, without any branches of old growth, will fill the rows with their new shoots the next season. It is upon the new shoots alone that the fruit is formed, anc the more vigorous these new shoot the greater the yield. One shoot, 20 or 30 inches long, will produce far more than 5 or 6, 4 inches long. Don't cut anything in the fall. Don't ! Don't ! Let the patch remain as near a wilderness as possible. In the winter or early spring cut out the old wood close to the ground, and then cut off the new canes as nearly 3 feet in height as possible. They will then be in the shape of straight sticks without a branch. But the roots are the matured product of an uninterrupted year's growth, and, as soon as spring opens, will develop the buds with great vigor. In no instance is the law of pruning more markedly shown than with the raspberry : summer pruning dwarfs both root and top ; winter or spring pruning increases the growth of both. Late summer and fall cultivation and summer and fall pruning have cost the raspberry farmers thousands of dollars each year. The idea that the more work they do the greater the crop, has ruined thousands of acres every year. Two good crops is about the average number, while side by side, other farmers with less work get from five to eight crops. The unvarying rules for raspberry pruning are : 1. Pinch the terminal bud when less than 12 inches high the first year. 2. After the first year do not cut a cane, mature or immature, old or new, during the season of growth. Adherence to these rules will give a permanence to the plant, limited only by the ability to keep the ground free from weeds, and to supply the fertilizer necessary to sustain such an enormous vegetable growth.—JEFFERSON SHERMAN in Rural New Yorker.

The Importance of Thinning Crops.—I am satisfied that but few farmers know the importance of thinning. They seem to think nothing needs thinning but corn. One bought some raspberries of me and said, "Come, look at my vines and tell me what is the matter with them ; they are a good kind but wont bear." I looked and saw at once. I said "How many stalks have you in each hill?" He laughed and said about forty. I said "What is the use of carrying your brains around with you if you don't use them?" There were ten plants where there should be only one as a rule. One good, thrifty, well-formed blackberry or raspberry stalk is worth a dozen over-crowded, thriftless, limbless ones. I once planted a big potato whole to get big potatoes and got a big hill full of little potatoes. It would have been all the same if I had planted a big ear of corn whole in a hill and expected big corn. Potatoes should be thinned to one or two eyes before plantiing. Few farmers do it. To thin my crop as I ought has taken more nerve than anything I have undertaken on the farm.—W. L. ANDERSON, Montgomery Co., Ind.

SEA-WEED AS A FERTILIZER.

SIR,—Will you please tell me if sea-weed is a good fertilizer, and, if so, whether for fruit or vegetables?

SEA-WEED, *Vancouver, B. C.*

Reply by F. T. Shutt, M.A., Chemist, Dominion Experimental Farms, Ottawa.

SEA-WEED is essentially a potassic manure, though in a certain degree it may be termed a "complete fertilizer," viz.: one that supplies the three more important constituents of plant growth—nitrogen, phosphoric acid and potash.

An analysis recently made of a sample of sea-weed *(Fucus furcatus)* obtained from the Atlantic coast, afforded me the following figures:—

Analysis of fresh Sea-weed.

Water	63.49
Organic matter, containing nitrogen	27.93
Ash or mineral matter, containing potash and phosphoric acid	8.58
	100.00

Pounds of fertilizing constituents in one ton of the fresh Sea-weed.

Nitrogen	pounds	9.36
Phosphoric acid	"	2.18
Potash	"	40.50

Sea-weed is a valuable manure both for the potash and nitrogen it contains, and for the ease and rapidity with which, by fermentation, this plant-food is converted into soluble and available forms. Its ready decomposition in the soil (except in very wet or very dry seasons) is of great advantage, since the sea-weed requires no previous treatment and its results are obtained in the first crop. Its application often improves the tilth of soil by supplying decomposing organic matter (humus) and increasing their absorbtive capacity for moisture.

Sea-weed gives best results on an open, porous, sandy, warm soil, and may be applied at the rate of 20-30 tons per acre. For general farm crops it may be supplemented by bone-meal and wood-ashes. It may, of course, be used alone for all purposes (though then there is apt to be a deficiency in phosphoric acid) or with barnyard manure..

In a light soil it is a responsive though not a permanent fertilizer, since its readily soluble constituents easily leach away.

Owing to the large percentage of water in the fresh material (60 % to 80 %), it is good economy to pile the sea-weed on the shore and allow it to dry out partially before hauling.

Sea-weed acts as an excellent fermenting agent for mixing with peat in the compost-heap—and at the same time supplies much valuable plant-food.

THE EMBELLISHMENT OF HOME-GROUNDS.

Flowers and showy foliage being professedly used for ornament should of course occupy the choicest site of the home-grounds. The work being necessarily formal and artificial, there will be no incongruity in the close proximity of rigid lines; and the dwelling-house may be as near as will best suit the general convenience in the use and enjoyment of the garden. The nature and extent of the collection will of course vary with the taste and means of the owner. The finer the design and the greater the variety of plants the better, so long as there is ample room for all in fitting proportion to the intrinsic merits of each kind, and to the general plan of the whole garden. It is well not to make any ambitious or pretentious display unless it can be easily and willingly kept in perfect order at all times. The immediate setting or surrounding of the garden should be in keeping with the central design. It is poor taste to make a gaudy show of fine flowers or bright foliage if adjacent grounds are weedy and seedy. It is equally bad taste to intrude such plants in formal masses into outlying portions of the grounds mainly devoted to other uses. Even on the ordinary lawn the quiet repose of the green sward may be disturbed by some garish mass of high colors. The discord is equally great when formal beds of like character are scattered along the lawn border amid irregular groups of shrubbery. This incongruity lasts the year round, for after the tender exotics die or are removed, the bald plots look equally foreign to turf and coppice. A lawn is one thing, a flower-garden another. Grass has recently supplanted gravel in the garden, thanks to the lawn-mower. But only in city lots can the plants be properly in such relative proportions to the turf as to convey the idea of both garden and lawn.—Wm. McMillan, before the Society of American Florists.

Pot-grown Strawberry Plants.—By the use of pot-grown plants, we market our early crops of potatoes, peas, etc., and afterwards, by setting these pot-grown plants, we may obtain a full crop of the finest strawberries the following season less than ten months from the time of planting, from the land that has produced a crop the previous season. One of my neighbors grows all his strawberries from plants set the preceding August or September, and he markets the choicest fruit grown to my knowledge.—R. N. Y.

GROWING ASPARAGUS.

SIR,—Please give me, through the pages of your valuable Magazine, the necessary instructions for preparing and planting an asparagus bed.

ALFRED PRIGGE, *Hamilton.*

IF two-year old roots are not readily obtainable, get seed of Conover's Colossal, Palmetto, or other popular sorts ; and, as early as possible in the spring, sow in rich mellow ground in drills two feet apart, covering the seed one inch deep ; should they come up too thickly, thin out to three inches apart. Keep scrupulously clean of weeds, and cultivate well for two seasons. If the asparagus beetle appears, apply any of the poisons used for potato bugs. Several applications may be necessary, as the larvæ of this small beetle destroy the foliage very rapidly.

Asparagus does well in almost any soil, for many years ; therefore, when two-year-old roots are ready, choose a situation where they may remain, work the soil up 10 or 12 inches deep, incorporating a liberal quantity of well-rotted barnyard manure. Draw wide furrows eight inches deep, and flat in the bottom, so the roots can be spread out all around, cover so the ground is level all over when finished. Place the roots so the crowns are one foot apart in the row, and have the rows three feet apart, for garden culture, and at least four feet for field culture. A light mulching of fine manure, as soon as planting is done, will help to keep the soil mellow, and promote a vigorous growth. Cultivation must be continued for two years more the same as for seedlings, and each fall the growth cleared off, and good manure spread over the entire surface at least two inches thick.

With careful culture and liberal fertilizing, the roots will be strong enough to permit cutting shoots freely the third season. Allow the shoots to grow six or eight inches high, and cut at the ground surface, not below. They are then tender their entire length, and better flavored. During very warm weather cut twice a day, or the tops will get a seedy appearance. If blanched shoots are desirable, to have them perfectly tender, the roots must be planted 12 inches deep, and a ridge of litter put over the rows in the spring, six or more inches high, and compact enough to exclude light and air, and as shoots break through this, cut at the bottom of the litter.

Summer manuring will promote an enormous growth, and to have extra large shoots for cutting the following season, the thin stems should be cut out just before the growth gets too heavy to pass through, as this will throw all the strength into the heavy stems to develop strong crowns. When clearing off the growth in the fall, every precaution should be used, that the seed does not get knocked off and scattered over the asparagus bed, as this will save much labor in pulling up seedlings. The tops are best gathered and burnt on an adjoining

land. Give a liberal covering of rich manure before winter sets in, and in the spring work this in with a fork or harrow. A week or so before the shoots appear, sow a a good fertilizer at the rate of 600 lbs. per acre, and clear out the weeds.

Asparagus is a great feeder, and will amply repay liberal manuring. This with care to prevent seedlings from getting a foothold and encouraging only strong shoots, are the requisites to produce the delicious asparagus.—Popular Gardening.

THE JAPANESE PLUMS.

Prof. Bailey, in Cornell Station Bulletin 62, classifies these plums as follows: *Yellow-skinned*—Georgeson, Normand, Kerr, and Ogon. *Red-skinned*—Abundance, Berckmans, Burbank, Kelsey, Long Fruit, Munson, Perfection, Strawberry, Babcock, Bailey, Berger, Chabot, Maru, Orient, Red Nagate, Willard and Yosebe. *Red-flesh*—Delaware, Heikes, Satsuma, Hale, Late Blood, and Uchi-Beni.

We select also the following from his notes concerning these plums:

The varieties now known to be hardy in the plum regions of New York are Burbank, Abundance, Willard, Ogon, Satsuma, Chabot, Yosebe, and Berger; and others give promise of being as hardy as these.

The period of ripening of the various kinds extends over a long season, running, in New York, from the middle of July to the middle of September. The same variety does not always appear to ripen at the same period in successive years. This is especially true of the Kelsey, which sometimes varies through a period of three months. In New York, the earliest market variety which has been tested appears to be Willard, followed closely by Ogon, then Abundance and Berckmans, and Burbank still later. Kelsey is generally the latest of all the varieties.

Most of the Japanese plums keep for several days, and some of them even for two weeks, after they are ripe. Satsuma is one of the best keepers known in the north.

The larger part of the varieties are red with deep yellow flesh, and the Satsuma and a few varieties less known, have deep red flesh. There are only four well-known yellow varieties. There are eight freestones, as follows: Ogon, Willard, Kelsey, Berger, Maru, Munson, Normand, Yosebe.

The varieties which can be most confidently recommended at the present time are, Abundance, Burbank, Willard, Kerr, Berckmans, Maru, Red Nagate, Chabot, Satsuma, and perhaps Ogon. Kelsey is recommended for the South.

The chief weaknesses of the Japanese plums are too early bloom of some varieties and liability to the fruit-rot fungus. Amongst their advantages are partial immunity from black knot and leaf blight, and often a partial freedom from curculio injury.

PLOUGH THE ORCHARD.

MUCH of the popular teaching has been (on paper) never to plough the orchard after the trees have attained considerable size and have come into bearing condition. "The plough cuts off much of the root growth," the story goes, "and works great injury to the trees. Better far to top-dress or pasture sheep and let the trees remain in grass."

It never was our luck to be on the popular side. For some reason we always have to look on, as opportunity offers, and see how the thing works. That a bounteous crop of apples can be grown with the trees in grass, we have seen proved. At the same time we have noted far more of success, a more continuous and bountiful production of fruit, where the orchard was ploughed and manured in frequent rotation. From years of observation, and something of experience, we confidently claim an orchard will show no injury from proper ploughing, but on the contrary, that on land suited to plough this is the cheapest and most effectual way of sustaining the health and thrift of the trees, and keeping them up to a bountiful production. Fruit is what we are after, and we want it often. Put the plough in, then, and stir up the soil. No matter if the roots are cut off, the tree will not be injured thereby any more than by the removal of a limb in pruning. With the ploughing apply manure of some kind, in small quantity, and note the marvelous effect. It is fruit that is wanted, not grass. A light manuring will work good results where the grass is turned under. Better to manure lightly and plough often than to apply bountifully, thinking to continue the benefits of a single application through a series of years. We have never seen an orchard injured from ploughing, except in the mind of a sensitive theorist.

Pasturing to sheep is well as far as it goes, but in the long run is not sufficient to keep production up to its possible certainty and frequency, unless there is a wide run outside the orchard enclosure and the flocks huddle among the trees. We were forcibly impressed with the correctness of the ground here taken on passing, a few days since, the well-known "True orchard," in the town of Wayne. The last time previously we had passed this orchard it had been pastured for several years with sheep. The foliage was looking pale and sickly, and the orchard throughout wore a discouraged and decaying look, and with only here and there a few straggling apples upon the trees. Since that time this orchard has changed hands, and is now owned by that active and enterprising farmer, B. F. Maxim, of that town. Mr. Maxim has put in the plough and stirred up the soil of the entire orchard, and though a crop of grain was taken off the present season, yet the whole orchard apparently is red with its bountiful crop of fruit. No doubt this great change could have been brought about by top-dressing, but it would have been far more costly. Too much of the surface application goes to feed the grass only, while the trees are left to starve. The sod needs to be broken, and the fertilizer of whatever kind put into the soil where the rootlets of the trees can find it. Don't be afraid of ploughing the orchard, only do it carefully and properly.—Exchange.

THE TALMAN SWEET AND THE GRAVENSTEIN.

THE frontispiece of the July number of the HORTICULTURIST is embellished with a fine illustration of the Talmas Sweet apple. You half apologize for bringing this old variety of apple into such prominence. In the early history of this county, the Talman Sweet was a very common variety in our orchard, but most of them have disappeared, mainly by other and more salable varieties being grafted upon them. In those days they found a ready enough sale, but now they are not wanted. Your own treatment of its merits leaves little to be said of it either pro or con. It possesses one quality, however, you have not enumerated. It is without doubt one of the best apples we grow for pickling. It retains its size, form and flavor when pickled, better than any other apple I know of.

You quote Mr. Nicol as recommending the Talman Sweet as good stock upon which to graft more tender varieties, amongst which he enumerates the Gravenstein, which, he says, "can only be grown in favored localities." I have frequently heard the Gravenstein referred to as being a tender apple tree, and was once told by an eminent authority that it could not be grown successfully as far north as Owen Sound. I have long ago been convinced that the Gravenstein should be ranked amongst our hardy varieties. I have three of these in my orchard which have been twenty-two years planted, and will match them against any three apple trees in this Province of like age for size, form and vigor. I have no recollection of seeing three finer apple trees anywhere. They have withstood the rigor of this climate during all these years without a twig being touched by frost. I am so impressed with their hardiness that I have top-grafted every tree so treated in my orchard with scions off these trees. To those who know the quality of the Gravenstein it needs no commendation. To my mind, it has no exual amongst the late fall varieties. For cooking or dessert it is alike good. Its form is faultless, and it possesses a rich aroma peculiar to itself, and it is uniformly large and attractive to the eye. This is the apple that gave to Nova Scotia its premier place, in the markets of Britain, amongst the apple-exporting countries of America, and it surprises me that its cultivation has not received more encouragement in this Province.

Owen Sound. R. MCKNAUGHT.

HERE is something for our ladies readers to try their skill on. Take a leaf of a tree or shrub, place it over a small piece of white linen soaked in spirits of nitre, and insert between the leaves of a heavy book, with a sheet of paper to receive the impression. Lay the book away for a few days and then examine. The leaf will be devoid of color, which will have been transferred to the paper in all the original beauty of tint and outline of the leaf. So says one who has tried the experiment.

EXPERIMENTS WITH STRAWBERRIES IN 1893 AND 1894.

THE following observations are made from the results of experiments made at the Ohio Experiment Station at Wooster, during the two seasons, 1893 and 1894. A more complete discussion will be given in a bulletin which will include descriptions and results, with many new sorts sent by originators for trial.

Beder Wood (perfect).—This has some merit as an early variety, but the foliage is subject to rust and the berries are too small to suit the demands of most markets.

Cyclone (perfect).—A new variety, grown three seasons at the Ohio Station, but not generally disseminated. The plant and fruit resemble the Haverland, but the berries are rather broader and shorter. Having perfect flowers and being similar to Haverland and Crescent, it can be recommended for planting with these varieties. It is quite early and yet continues long in bearing, and holds up in size quite well to the last. It should be given a trial generally.

Enhance (perfect).—In many repects a desirable variety, being prolific and having perfect blossoms. The berries are ill-shaped and quite acid. For canning and distant market it can be recommended.

Greenville (imperfect).—This has been on trial several seasons and is now quite generally disseminated. It has always been satisfactory at the Ohio Station, and seems to suit growers for near market. It is not firm enough for long shipments, but its freedom from disease, its prolificacy, fine appearance and good quality make it one of the best for home use and for near market. It is worthy of general trial.

Lovett (perfect).—This has been sufficiently tested to determine that it has merit. The plants are healthy and prolific, the berries average above medium size and it must be rated as reliable. It is a good companion for Crescent or Haverland.

Michel's Early (perfect)—Very early, but too small, soft and unproductive for general cultivation. A few may be planted for home use and when earliness is a desirable quality, but in any case the plants should be kept thin in the row.

Muskingum (perfect)—Somewhat like Bubach in being difficult to start, which often makes it disappointing. When well grown it is one of the most satisfactory of the perfect flowered sorts for home use and near market.

Marshall (perfect)—Plants vigorous and free from disease, but only moderately prolific. The berries are large, beautiful and of good quality, making it a desirable sort for amateurs and for those who cater to a market for fancy berries. For the ordinary commercial grower it will probably not prove more profitable than the best standard sorts, but that there is place for it can hardly be doubted.

Parker Earle (perfect)—One of the most prolific varieties in existence, but on poor soil or in dry season the greater share of the berries fail to reach a marketable size. Unless it can be given the ulmost favorable conditiods it will not prove satisfactory.

Princeton Chief (imperfect)—A new variety that requires further testing before a fair judgment can be rendered. The plants are very vigorous, but apparently not prolific. The berries are of medium size, quite attractive in appearance, but very acid. They are firm, however, and it may prove to be a valuable market variety. Season medium to late.

Swindle and *Shucklen* not desirable, although the latter has been tested one season only.

Timbrell (imperfect)—A much lauded and widely advertised variety, but far from satisfactory. The berries color poorly, often in patches, giving them an unsightly appearance. From 50 plants not a single quart of marketable berries were picked during the season. The same complaint is heard from other quarters, hence as a market berry the Timbrell is probable of little value.

The best of the old varieties are Warfield, Bubach, Crescent and Haverland, and no variety seems to have been found that is likely to supersede them.

Gooseberries.—The greatly increased demand for this fruit is even more noticeable this year than it was during the two previous seasons, and it is of growing importance that we should be able to raise fine gooseberries without mildew or other loss. I have for the last ten years had no trouble either with the native or the foreign varieties of this fruit. Formerly I was much troubled with mildew. My plan now is to grow on high, well-drained soil, in rows running north and south, and well open to the sun. There is no danger from shade if the land be open and well-drained. The plants should be in rows, easily cultivated with a horse, and the soil often stirred in the spring. I do not think it pays us to grow the natives like Downing and Houghton and Smith, so long as we can just as well grow the larger sorts. Industry has never done well with me, but others report that it is prolific. Crown Bob and Whitesmith are two of the best of foreign parentage. But better yet is an old sort we have had for sixty years, and known only as the "Irish Gooseberry." The earliest and richest I have is a wilding, which resembles the foreign sorts in bush, but has a fruit like Houghton in color, but much lighter red. It bears abundantly, and is ripe about the 1st of July. It is evidently a cross between the foreign and native species. Columbus and Red Jacket, I think, are emphatically valuable introductions. There is room for a new race of cross-bred gooseberries.—Garden and Lawn.

SOME HANDSOME AUGUST-BLOOMING WILD FLOWERS.

THE two coneflowers are very showy, well worthy of cultivation in the flower garden. The variety most widely disseminated is the ORANGE-COLORED CONEFLOWER, *Rudbeckia hirta, Linn.* It begins to bloom in July, continues through the month of August, and often to the middle of September. The ray florets are of a flaming orange color, varying in length from half an inch to an inch; the cone-shaped centre, or disc, is of a deep, rich purple, contrasting most effectively with the bright rays. It is to be found in open meadows and sunny spots on the borders of thickets. The plant is rough, hairy on leaf and stem, grows to the height of one to three feet, often a straight, simple stem, but in good soil is frequently branched from near the base. The flower heads are borne singly on long stalks, well adapted for cutting, and last in water for a week. The leaves on the stalk are few, widely separated, and without petiole or leaf-stalk; the lower leaves are petioled.

The YELLOW CONEFLOWER, *Rudbeckia laciniata, Linn*, may be readily distinguished from the preceding by its light yellow rays, greenish disc, smooth stem, branching habit, taller growth, and laciniate, or jagged leaves. It grows to a considerable height in rich, moist bottom lands, but usually from five to seven feet. The May florets are often two inches long, narrow in proportion to their length, and drooping. Their color is a clear, bright yellow. The heads are borne on long stalks, and keep in water for a week when cut. This species is usually found growing in low thickets, and is specially vigorous in the flats of the Humber River, not far from Toronto.

There are two species of Liatris to be found growing in Ontario, known in some places by the name of Blazing Star. THE CYLINDRICAL BLAZING STAR, *Liatris cylindricea, Willdenow*, is quite common in the vicinity of Toronto, growing to the height of twelve to eighteen inches; the stem is slender, upright and rigid; the leaves long, narrow, grass-like. The flower heads are set alternately on the stem, in the axils of the leaves, and borne on stout stalks. The form of the flower heads is cylindrical, and there are from eight to twelve heads on a stem, containing from sixteen to twenty rosy-purple flowers in each head. It is to be found in dry soils, usually on the slopes near lakes or streams, growing from a bulbous or corm-like root; these corms can be easily taken up in the autumn and transferred to some dry, sunny spot in the garden, where they will flourish with but little care.

LIATRIS SPICATA, WILLDENOW, is much like the one just described, growing

taller, from two to five feet high ; the heads more closely crowded on the long spike ; and frequenting moist instead of dry soils. It has not been found by the writer, in the vicinity of Toronto. Mr. J. A. Morton mentions it among the attractive wild flowers growing in the vicinity of Wingham, and Macoun says it is found in marshy meadows, from Sarnia to Point Edward.

The flowers of both varieties retain their rosy-purple color when dried, thus making an excellent winter boquet. They can be grown from seed as well as by transplanting the corms, and make, in a short time, an attractive feature of the flower garden. There is another Canadian species found in our prairie lands the flower heads of which contain from thirty to forty flowers. It grows in dry England Westward to Minnesota, and southward. It is known as *Liatris scariosa*, *Willdenow*. The Rudbeckias and Liatris belongs to the compostic family.
soil, from two to five feet high, and, according to Gray, is to be found from New

THE BUTTERFLY-FLOWER, *Asclepias tuberosa*, *Linn*, grows in any dry soil in the open sunshine ; sometimes to be found in open woods, or among trees of small growth. The roots are thick and in young plants carrot-like in shape, but lose this form with age, becoming more woody and extending to a considerable depth. They do not bear transplanting well, on which account it is better to raise them from seed sown where the plants are to remain. The stalk is erect, clothed throughout with broadly linear leaves, and fine hairs ; branching at the top, the branches terminating in a corymb of brilliant orange-red flowers, varying in intensity of color with the age of the flowers. The plant continues in bloom for a considerable while, and the cut flowers keep a long time in water, thus adding to the variety of such as are desireable for table boquets ; while the cut stems do not exude a viscid milky juice so abundant in some of the other species of this genus.

The peculiar form of the individual flowers of all of the plants of this genus is a very interesting study, a careful examination of which is earnestly commended, noting particularly the hooded nectaries on the tube of stamens which encloses the pistil, and the attachment of the anthers to the stigma, with their hanging pairs of pear-shaped pollen-masses.

THE CARDINAL FLOWER, *Lobelia cardinalis*, *Linn*, is widely distributed throughout Ontario, frequenting low grounds, yet easily grown in any good garden soil, especially from seed. The flowers are very showy, deep red, borne on stems two to four feet high, in elongated, somewhat one-sided racemes. The flame color of these flowers renders them a very conspicuous garden ornament. The plants will thrive in partial shade, or in the open air, but do not endure well a protracted drouth.

THE GREAT LOBELIA, *Lobelia syphilitica*, *Linn*, is a blue flowered species, the flowers nearly an inch long, borne on a leafy stem varying from one to five feet high. This also is to be found in low grounds throughout Ontario. The writer has had no experience with it in cultivation, yet has no doubt but that

it could be easily grown from seed in good garden soil, especially if not allowed to suffer from drouth.

THE HAREBELL, *Campanula rotuudifolia, Linn*, this beautiful flower begins to appear in the last days of June, and continues with us all summer. The blossoms are bright blue, from half an inch to three quarters long; the plant seems to prefer partial shade, takes kindly to the garden, and makes a pretty appearance planted in masses.

Toronto. D. W. BEADLE.

A UNIQUE PLANT STAND.

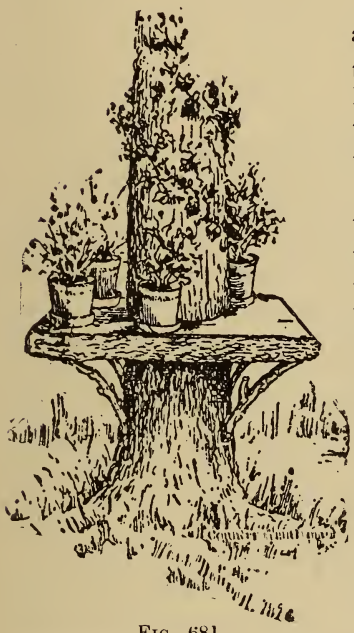


FIG. 681.

House plants must have their summer outing as well as the house people, and one often sees them set about on the doorsteps and ground. If there is a tree on the lawn, a novel table for them may be made about its trunk, as shown in the illustration.

Two cross-pieces are first spiked securely to the tree to serve as supports for the platform, which is made of boards fitted around the trunk. Four props are cut from slender branches and fastened underneath. These should be as little trimmed as possible, to give a more rustic effect. And the same effect may be given the edges of the platform by nailing on rough strips for a finish. These strips are obtained by splitting a 2-inch "sapling" lengthwise, the halves being then applied to the platform edges. The little table is then ready for its load.

If some of the plants are vines they will take very kindly to the strong, straight trunk as a climbing-post, and very soon will twist about it in a charming way. One can hardly imagine the artistic features of this little table of flowers till one sees it upon the home lawn, telling its own story.—W. D., in Country Gentleman.

"CALL these fine cattle?" said a big countryman at an agricultural show, where for some time he had been annoying the exhibitors by depreciating their stock. "They ain't nothin' to what my folks raise. Why, my father raised the biggest calf of any farmer round our part." "Ah," said a bystander, looking at him; "we can quite believe that!"—London Tid-Bits.

A FEW WORDS ABOUT ROSES.*

By the Hon. Mrs. Lambart, Ottawa.

OME years ago when I was invited to write a paper on Roses, I readily consented. I was then enjoying my first success in cultivating my favorite flower, and felt possessed of such an unlimited fund of information on the subject that I was ready to instruct anyone who stood in need of such knowledge. But since then years have put to the test some of my pet theories, and, I must confess, put many of them to flight, and now I only feel capable of saying just a few words in the matter. The wisdom of my reserve is all the more evident from the fact that my friend Mr. MacGrady's experience is almost directly contradictory to my own, especially in the matter of pruning.

It must be understood that whatever I now say is intended for the novice only. I no longer aspire to teach the experienced floriculturist.

The first necessity for rose growing is morning sun. I do not believe that any satisfaction can possibly be obtained without it, even though the sun should beat on one's roses from midday to midnight. It is the early morning sun which is the source of life and strength to them, and if, after midday, they are in shade, so much the better. Rich soil, a shelter from north and east winds by shrubs, or by a fence not too near, and plenty of room, of ventilation between the bushes —under these conditions any rose, except standards, may be grown with perfect success in Ottawa.

Of course nearly all of them must be covered in winter—and the tea-roses much more heavily than the others. Rosa Rugosa, all the briars (including the two yellow roses) and all moss roses are better for being left quite unprotected. All should be heavily mulched before the 1st of July.

The most important division, to the gardener, is that of remontant and non-remontant of summer varieties. The former bloom on shoots of the same year's growth, while the latter must have two-year-old wood before they will show us a flower. As to pruning: if one's roses are all remontant, the experience of Canon Hole, the well-known rosarian, will serve as a guide. He said that his roses had never been so glorious as they were the year they had been pruned by a donkey, when a donkey had broken into his garden and cropped his remontants to the ground. According to this one should cut out, as one does with its cousin the

* A paper read before the Ottawa (Canada) Agricultural Society, June 26, 1894.

raspberry bush, every shoot that has borne, and shorten the new growth; while with the others only two-year-old wood must go.

If I could only grow one rose it should be Jacqueminot, and if I could have six they should all be the same; but if more might be mine for the choosing, I would say: three La France, three Madame Victoire Verdier, three Baroness Rothschild, three Merveille de Lyon, one Gracilis Moss, one Old English Moss and one Crested Moss.

There are of course dozens more, perfect dreams of loveliness; but some weakness of constitution or shyness of blooming would make me wait until a year's success with the varieties I have named had given me strength to bear the trial of a possible failure with the host of beauties which rise before me at this moment and plead in vain for a word on their behalf.

Vine Lynne, New Edinburgh, Ottawa, Canada.

A Few Words About Mignonette.—Among the various varieties of mignonette, my choice is, Machet, either for open air or pot culture. When required in large quantities for winter flowering in pots, I consider the best method is to prepare a quantity of turfy loam and leaf mouid in equal parts, mix the same and spread it over the place intended to sow the seed, say on an old hot-bed. If for early bloom, the seed should be sown early in August; and not later than the beginning of September if required for mid-winter and early spring. After the seed is sown it should be well watered and shaded for a few days. When the plants are up give them all the light and sun possible. The plants may be allowed to remain in the seed bed until they have made four or five good leaves which will be in about three or four weeks, when a light hot-bed should be prepared. After the bed has started to heat, place sufficient earth over the bed to plunge the pots required, which will be about six inch; fill the pots with about three parts turfy loam and one part well decomposed cow manure mixed with a sprinkling of sand, taking care to give good drainage. When the earth becomes warm in the pots, the plants may be lifted and pricked off into the pots. Four or five plants in each pot will soon make a good saleable plant. The plants should remain in the frames as long as possible, and that they should get plenty of air and light. When mignonette is grown in the green house the plants should be given a cool, light, airy place near the glass. I may remark that, when the plants become pot-bound, liquid manure should be used, or it may be necessary to repot them if large plants are required. Where only a few plants are required I would advise that the seed should be sown in small pots in a cold frame. When up, thin out and repot when large enough.—JOHN PERRIN, before Montreal Hort. Society.

THE ZINNIA.

THE Zinnias are a very showy garden flower, so named in honor of J. G. Zinn, Professor of Botany at Gothingen. There are about half a dozen known species, mostly from Mexico. The best known species are annuals, and from one of these, Zinnia elegans, most of the garden varieties have descended, some of them single and some of them double, *e.g.*, coceinea, Darwini, violacea, etc.

Zinnia's should be sown in gentle heat, two or three months before time

FIG. 682.

for transplanting into the garden, and great care should be taken to prevent stunting at any stage of growth.

Cook Potatoes in Their Jackets.—Dr. Letheby, an English physician, who has given much attention to the analysis of foods, says that potatoes cooked in their skins contain a much larger amount of nutriment than if peeled before cooking. He says that baked potatoes are not only more delicious, but that they contain eleven per cent. more nutricious material than boiled potatoes.—Literary Digest.

Apple Trees of unfertile varieties, separated from other trees and that do not bear should be grafted with a fertile variety. To stimulate growth where the orchard has been in sod and cropped annually, plow three to four in deep in the spring, put on a liberal application of ashes and bone dust, and cultivate every fortnight during the season until Aug. or Sept.

LETTERS FROM RUSSIA—XV.

(Original in French.)

M R MITSCHURIN, one of the most celebrated of Russian horticulturists, has given much attention to the resolving of this question: "What kinds of fruit trees can be grown and propagated successfully in the Russian Province of Tambow (53 north latitude and 40 east longitude)?" He is about to publish the results of his experiments followed out during many years. These make a very interesting descriptive catalogue, which shows us all the varieties of fruit trees grown in the gardens of Mr. Mitschurin, and makes known to us how well each of them is able to endure the cold, and which are worthy of cultivation in the orchards of commercial growers and in the gardens of amateurs. This catalogue gives us the descriptions of many new and well-known kinds, and also some seedlings grown from seeds by Mr. Mitschurin himself. The object of this letter is to make these known to the worthy readers of the HORTICULTURIST.

Of apples, the said catalogue contains a list of one hundred varieties, of which number one to ten belong to a class known as Antonowka.

1. *Antonowka Simple.*—Fruit, moderate size; color, greenish with yellow side; form, conical; flavor, bitterish with a special aroma. This apple keeps at Tambow until March. The tree endures a great amount of cold, is very productive, and is likely to give very fine results in large commercial orchards.

2. *Stone Antonowka.*—(See CANADIAN HORTICULTURIST, August No., 1889.) Fruit, moderate size; color, yellow, reddish on the south side; form, round; flesh, firm and agreeable; keeps until May without suffering in flavor. The tree is less hardy and less productive than No. 1, and consequently the raising of it is to be less commended for commercial orchards.

3. *Pound Antonowka* (Fig. 683*).—This sort is preferable to all the varieties of Antonowka. It originated from the White Antonowka. The fruit is very large, and under favorable circumstances it reaches two pounds, Russian weight—usually only one pound. Color, whitish green; form, oblong, with some sides projecting. In a word, the apple is very fine. Its flavor is mild acid, it has a fine aroma, and the flesh is firm. The tree is hardy and very productive, and the fruit keeps until May without losing quality. Mr. Mitschurin highly commends this variety for general trial, both for commercial growers and amateurs.

4. *Antonowka de Mohileu* differs from the preceding variety, being about one half the size.

*The illustrations lack elegance, but show the natural size of the fruits.

5. *Antonowka Blanche* resembles No. 4.

6. *Antonowka Douce* is a very fine apple, but the tree is not hardy.

7. *Antonowka d'Automne.*—The fruit of this variety is very large; form, round; flavor, very good; keeps till December. The tree is very hardy, and may be recommended for commercial orchards.

8. *Golden Antonowka.*—Fruit, large; color, white with a yellowish shade; flavor, agreeable. The tree is not hardy.

9. *Grosse Antonowka.*—An excellent kind, which keeps a long time. The tree is very durable.

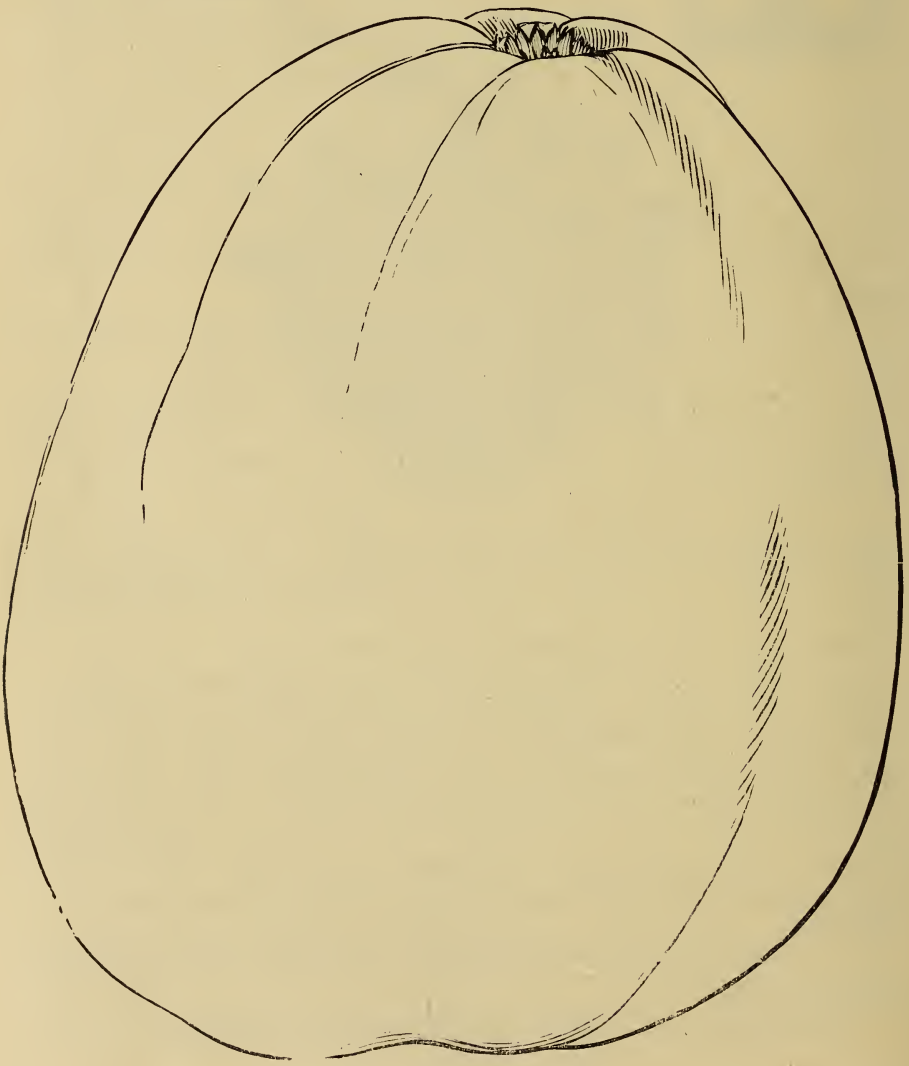


FIG. 683.—POUND ANTONOWKA.

10. *Nouvelle Antonowka* —This superb variety, with very firm flesh, has been raised by Mr. Matschurin from seeds of the Stone Antonowka.

22. *Duchess of Oldenburg* was raised from seeds of the celebrated Borowinka. The fruit is very large, raddish-shaped; color, bright purple; flesh, yellow, and very delicious. It keeps till January. The tree is very productive, and hardy to an extraordinary degree. A better commercial sort.

71. *Beaute d' Eté.*—A new seedling. Fruit of moderate size and excellent flavor and magnificent coloring. A good apple for dessert, and an excellent commercial sort. The tree is hardy.

Although the climate of Tambow is very unfavorable for the cultivation of pears, Mr. Mitschurin has raised twenty-six varieties of them, namely :—

1. *Bessemianka Ordinaire.*—Fruit is of moderate dimensions; form conical pointed; color green; flesh juicy, agreeable; ripens toward the end of August, and keeps for several weeks. The tree is very hardy.

2. *Grosse Bessemianka* (Pear without seeds).—Fruit is large enough; color green; flesh soft, buttery, very agreeable; better commercial sort. Tree tender.

3. *Bakholda.*—A new kind. Fruit large; form oblong and conical; color yellow; flavor mild acid; ripens in September and keeps until October. Tree longlived.

4. *Bergamotte d'Automne.*—Fruit of moderate dimensions; form round; color greenish brown; flesh agreeable, coarse. The tree is fairly longlived.

5. *Bergamotte d'Hiver.*—New kind. Fruit rather small; form round; color green; flavor good; ripens towards the end of September and keeps until the middle of December. The tree is longlived and a strong grower.

6. *Bergamotte de Kursk*, and 7. *Bergamotte de Voronegè.*—Two varieties with showy fruit, but the trees are not hardy.

8. *Sand Bergamotte.*—A good kind, and agreeable; moderate size; tree durable.

9. *Béré Blanche de Lifland.*—(See annual report Ontario Fruit Growers' Association, 1892), and (*b*) *Béré Verte de Liflande.*—Fruit of excellent flavor. Trees not hardy.

10. *Vosschanka.*—(Poire cire.)—Fruit of moderate size; color yellow; flavor excellent; ripens in the month of August, and keeps till October.

11. *Winter Nelis.*—A foreign variety which is so well acclimated that it suffers very little in our severe winters. Ripens in September, and keeps till January. Those who graft them prefer Ussuriensis stock, as they are longer-lived when grown upon that stock.

12. *Krivonogof.*—A good sort, originating in the Province of Toula. Tree very hardy.

13. *Kozlof.*—Fruit moderate size; flavor very good; ripens in the month of September. Tree very hardy.

14. *Médvédevka.*—Resembles No. 9 (*a*).

15. *Médofka* (Poire miel).—Fruit very small; form conical; color clear yellow; flesh very melting and agreeable. Tree enduring.

16. *Mitschurin.*—A kind known under this name at Calouga, a town in Russia, for more than fifty years. The tree is very hardy. Fruit moderate size; ripens in August.

17. *Ordynka.*

18. *Princesse, Beurre Romaine*—(See annual report of the Ontario Fruit Growers' Association for 1892). Fruit large, fine; form long; flavor excellent. Tree hardy.

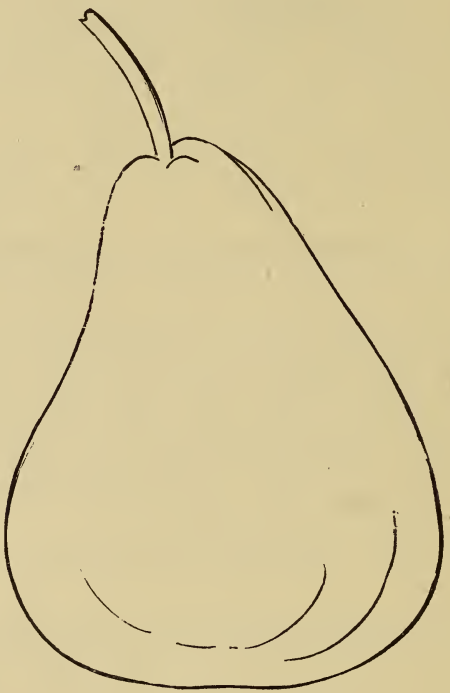


FIG. 684.—ROULEF PEAR.

19. *Rylsk.*—Fruit of moderate size; color yellow; flavor passable. Tree enduring.

20. *Roulef* (Fig. 684).—A variety raised from seeds by Mr. Matschurin. Fruit moderate size; color yellow; flavor excellent. Tree enduring. Deserves to be commended for its productiveness, flavor, and firmness, for commercial orchards.

21. *Sapieganka.*—(See CANADIAN HORTICULTURIST, August, 1890.) Fruit of moderate dimensions, and superb flavor. Ripens in October. Tree sufficiently hardy.

22. *Tonkovetka.*—Fruit moderate size; form conical; color yellow, with red on the sunny side; flesh porous; ripens in the beginning of August, and keeps till September. Tree hardy, fine, productive and commendable for commercial orchards.

23. *Tsar.*—Fruit moderate size; form conical; color yellow, red on the sunny side; flesh soft; mellow and agreeable; flavor mild; ripens in the month of August and keeps till September. Tree very firm and wonderfully productive; pyramidal in form.

24. *Tchébiché.*—As yet little tried.

25. *Poire Livre.*—Fruit large, sufficiently desirable. Tree hardy.

26. *Chéropay.*—As yet little known.

With regard to plums and cherries, Mr. Mitschurin has cultivated twenty-three varieties. Among them he has tried some fine varieties of his own growing. The said catalogue mentions the following varieties of plums :—

1. *Sainte Catharine Bleue.*—Fruit large; color blue; flavor excellent. Ripens toward the end of August. Tree hardy.

2. *Nikolski Blanche.*—Fruit moderate size; color greenish white; flavor excellent; very productive. Tree durable.

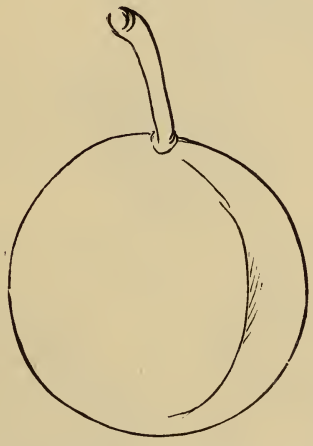


FIG. 685.—TABLOTCHKOF PLUM.

3. *Progrès.*—A seedling grown by Mr. Mitschurin. Fruit large; form oval; color red; flesh mild. Ripens in the beginning of August. Tree particularly hardy.

4. *Moore's Arctic.*—An American variety which endures well the climate of Tambow.

5. *Reine Claude Mitschurin.*—A new sort from the seed of Washington plum. Tree sufficiently hardy.

6. *Reine Claude Verte Nouvelle.*—Grown from the seed of the green Reine Claude. Tree hardy.

7. *Reine Claude Verte Naine.*—An excellent variety grown from the seed of Reine Claude Verte. Tree hardy.

8. *La Precoce Rouge.*—Fruit large, red. Ripens in the beginning of August. Tree hardy.

9. *Hébé.*—A new variety. Fruit whitish. Tree hardy.

10. *Myosotis Bleu.*—A new seedling of Mr. Mitschurin's. Fruit small. Tree hardy.

11. *Kozlof Bleu.*—New seedling. Tree hardy.

12. *Tablotchkof Rouge* (Fig. 685).—An excellent variety originating in Toula. Fruit large; flavor excellent. Ripens in the beginning of August. Tree very durable. First-class commercial variety.

13. *Kozlof Egg.*—A seedling raised by Mr. Mitschurin. Fruit large, yellow. Tree hardy.

14. *Pount Blanc.*—Fruit very large; color yellowish green. Ripens in September. Tree hardy.

15. *Merise Bleue.*—An excellent variety. Fruit small; flavor agreeably tart. Tree durable, productive. Excellent for canning and, therefore, the price in the market is always high.

Winnitza, Podolie, Russia. JAROSLAV NIEMETZ.

Crosby's Seedling.—Two samples of this gooseberry came to hand from A. Reeve, Highland Creek. It is surely a seeding of some good English variety. Size, large to very large, an inch and a quarter to an inch and a half in length. Rib veins, mostly visible. Skin smooth, flesh soft, juicy, very good.

Kearney's Golden.—Some five samples of this berry also came to us from Mr. Karney, Paris. He says it is probably some old English sort brought by him to this country twenty-five or thirty years ago. About size of Whitesmith.

Two varieties also came with name of sender. One a fine very large green variety, and the other a medium sized red variety.

THE SARAH RASPBERRY.

AMONG the new fruits distributed last spring among the members of our Association for testing, was the Sarah raspberry, plants of which were kindly furnished us by the Director of the Central Experimental Farm at Ottawa. We give a cut of this berry and description from the last report of the Horticulturist, Mr. John Craig.

FIG. 686.—SARAH.

SARAH.—(Record number 4-38.) Produced in London, Ont., by Prof. Saunders, from seed of Shaffer's Colossal. Plant a moderate grower, suckering freely, and propagating naturally only in this way. The foliage seems to be intermediate between the European raspberry *Rubus Idaeus* and the American *Rubus Strigosus*. The canes have been affected to some extent by anthracnose, but not more than Cuthbert or Marlboro' growing alongside. Fruit large, round ; drupes large, deep garnet, firm, very juicy, pleasantly acid and exceptionally rich. See Fig. 686. A few ripe berries were found last year, and this year, at the time of the first picking of Cuthbert, but the main crop did not ripen till the season of Cuthbert was over, the last picking taking place each year from the 8th to 12th August.

A striking characteristic of this variety is its habit of ripening the fruit in consecutive order and much regularity, beginning with the terminal clusters of each branch. Of course this is in a measure true of all red raspberries, but none that I know of carry the peculiarity to the same extent.

The Marshall Strawberry.—The Rural New Yorker is responsible for the following statements regarding this berry, and also for the accompanying engraving of it.

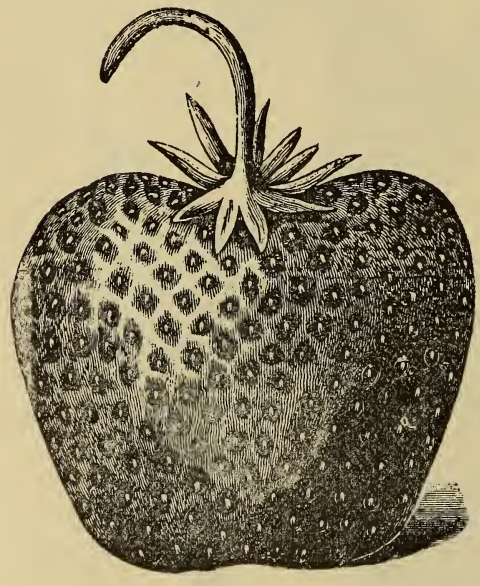


FIG. 687.—THE MARSHALL STRAWBERRY.

T. J. Dwyer praises the new strawberry Marshall as "the finest sort ever grown in this country." He considers it as surpassing in size any other variety, as of the richest quality, as a "remarkably fine keeper and carrier."

Mr. E. W. Wood, of the Massachusetts Hort. Society, regards it as "the most promising variety grown, the largest measuring over seven inches in circumference."

The Marshall was sent to us in May of last year by M. F. Ewell, of Marshfield Hills, Mass. The vines are healthy, but not unusually vigorous. Berries began to ripen June 1. These were of the largest size, fairly regular, scarlet, red flesh, mild flavor, and about as firm as Sharpless. They are still ripening, though the berries now (June 20) are of ordinary size.

THE APPLE AND PEAR CROP.

Every month the prospect for a heavy yield of apples has become more gloomy. That terrible scourge, the apple scab, has so weakened the trees, that both leaves and fruit are inclined to drop, until very little is left to come to maturity. Not only in Southern Ontario is this the case, but also in Middle and Northern Ontario, where hitherto there has been much less damage from this fungus.

We append extracts from reports received up to the 26th ultimo.

Southern Ontario.

W. M. ORR, Stoney Creek :—Apples, although promising a large crop in the spring, will prove almost a total failure. The superabundance of rain in May, followed by intense heat and drought in June and first half of July, with thermometer at times nearly 100 in the shade, was too much for the apple crop. The leaves have blighted badly, and most of the fruit has fallen. Winter fruit will be from 5 to 10 %, and Fall varieties from 10 to 15 of a full crop. Pear trees are well loaded, and promise a full crop, with very little blight.

A. M. SMITH, St. Catharines :—Since writing you before, apples have dropped badly, and there will not be more than one-tenth of a crop in this section. Pears are doing fairly and I think will be 50 % ; plums about same ; grapes are looking well and will go 75 to 80.

J. R. HOWELL, Brantford :—The apple crop will be poor this year, with the exception of Astracans and Duchess. Some trees have blighted badly. In a fifteen mile drive in our county the other day, there seemed to be hardly an apple in any of the orchards.

JOHN ARNOLD. Paris :—Our fruit prospects are not the brightest, pears in particular are dying with blight, so that in a very few years we shall have none. At one time I thought the Bartlett was the most subject to its attack, but now it seizes all kinds alike. Has the unusual hot weather lately been partly the cause of it ? Allow me to congratulate you on the improvement of *our* paper ; it is taking a foremost place in our county.

J. K. MCMICHAEL, Waterford :—We have at present about 25% of an apple crop ; with very badly diseased foliage, and the fruit still dropping. Pears will be about half a crop.

W. W. HILLBORN, Leamington :—So far as I can learn the apple crop in Essex is above an average crop, but it is badly affected by the apple scab, or fungi. Pears are a large crop, and now appear to be quite clean and if the weather should prove favorable we may expect a large crop of fine fruit.

A. MCNEILL, Windsor :—Apples will be 50% of a crop in Essex County, but fungi and insect may render present indications deceptive. Pears 75, Bartletts full crop, Flemish Beauty 50, but scabby, Seckels 50.

E. WARDROPER, Pelee Island :—The grape is the only crop grown to any extent on this island and I find the prospects good for a fair crop from all. Concord and Ives at 75 and the Catawba somewhat better, no injury from frost or fungi at any time. All vineyards of any size are now sprayed here regularly. Last year not an inch of rain from 1st of June to September and I never saw finer grapes. It now looks as if we should have a repetition of the season. I notice young nut trees planted only three years ago have quite a sprinkling of fruit on this year ; how is it with yours ?

Middle Ontario.

GEORGE NICOL, Cataraqui :—Apples in this district will not be more than 60% Snow well loaded and clean ; Duchess, Astrachan, Transparent, 80, Russet, Ben Davis, Canada Red, and other late varieties are light and not more than 40. Very few pears planted in this county, crop light, probably 25.

R. MCKNIGHT, Owen Sound :—The aggregate crop of apples in this section will be fairly satisfactory. The fruit set but sparingly, considering the great profusion of bloom

last spring. I attribute the comparatively thin crop to the state of the weather at the time when fertilization is effected ; at that critical period the weather was so cold that insects (whose function it is to assist in this work) were unable to be on the wing. This applies more particularly to Fall varieties. In 1890 we had a like state of things with a like result.

J. D. STEWART, Russeldale :—No improvement to note *re* apples and pears. On the contrary the crop is gradually getting smaller by degrees. Would reduce my former estimate of the same to summer and autumn kinds, 40% ; Winter, 25. Pears, 25, and the samples, as regards size, cracks, and freedom from spots, far short of former years. What a change to fruit growers, and the public generally.

A. McD. ALLAN, Goderich :—Apples as a crop, in the county, will not average over 50%, and if this dry weather continues much longer, the average will come down, as they are dropping badly. Pears will give an average of 65%, locally 75. Samples of all will be small, owing to long drought.

Northern Ontario.

JOHN CRAIG, Ottawa :—The prospects of the apple crop in this section have not materially changed since last writing you, on the subject. Tetofsky, Duchess and Wealthy, are a good crop, but show a tendency to drop more than usual this year. Winter apples give promise of a fair crop. This class of fruit, however, in this vicinity is not grown to sufficient extent to affect other than local markets.

W. S. TURNER, Ottawa :—I cannot make many changes from my former report. Visited several orchards yesterday and found apples, both fall and winter varieties, good, remarkably free from scab, resulting, no doubt, from spraying, as I see fruit growers are spraying more this summer than formerly. Small fruits have been good, with the exception of gooseberries, in one or two cases, which, though sprayed with potassium sulphide every two weeks, still suffered from mildew. The tent caterpillar is again making its appearance, fruit and shade trees of careless growers are suffering accordingly. I would put the fruit crop for this district as follows : Strawberries, 90% ; currants and gooseberries, 75 ; apples, 100 ; plums, 75.

British Columbia.

N. BUTCHAD, Port Moody :—I will have to cut off all expenses this year, as our fruit crop is a failure.

JOHN MURRAY, Spence's Bridge :—Grand whheter here. Fruits of all kinds promise a good crop. I will begin shipping tomatoes the first of August. Expect to have 800 to 1000 forty pound boxes. Grapes, peaches and plums promise well.

Oregon.

F. F. BEATTY, Chemawa :—My fruit crop is a most awful failure this year, and I have to cut expenses down to the lowest notch. Out of an expected usual crop of plums of 3000 bushels, or more, I will have less than fifty. The apple crop is less in proportion ; scarcely enough for home use.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

The Advantages of Spraying for Pear Scab have been distinctly observed at Maplehurst. One large orchard of fifteen hundred bearing trees of the Bartletts were some years ago so badly affected with fusicladium pyrinum, that the fruit was almost unsalable. In 1891 we sprayed the trees with ammoniacal copper carbonate, one application, and thought we observed some good effects; in 1892 we tried Bordeaux mixture, giving two applications, both after the young fruit was set. The scab was already bad upon all the young fruit, but the result was to stay its progress, and much of the fruit was marketable. About the same treatment and results were observed in 1893; but in 1894 (the present season), we have given the orchard more thorough treatment, with distinct results. Three applications of Bordeaux mixture have been made, in addition to the one of copper sulphate, which was made before the leaves came out. As a result we have healthy, vigorous trees, and the cleanest fruit ever seen in the orchard. The difference between trees treated and not treated is so marked that we shall not think of omitting the spraying with Bordeaux any future season. In the Experiment Record, Vol. 5. No. 10, p. 987, is given a table showing Prof. Beach's results in this line, with Seckel and White Doyenne pears, which we quote here.

The Doyenne trees were sprayed May 10, 19, and 31, and June 12 and 28. The Seckles were sprayed May 2, 10, 19, and 31, and June 12 and 28. On July 18 it was noted that nerely every fruit on the lower brances of the sprayed trees was perfect, while on the unsprayed trees nearly every fruit was blemished by the scab. This difference between the sprayed and unsprayed fruit became more noticeable as the season advanced.

The fruit was picked the fourth week in September and assorted into three grades—firsts, seconds, and culls. No use was made of the culls. The prices realized for the different grades of fruit were as follows :

Comparative value of sprayed and unsprayed pears.

	Sprayed.	Unsprayed.
Seckel :		
Firsts	$2.25 to $2.75 per bushel	$1.25 to $1.75 per bushel.
Seconds	$1.75 to $2 per bushel	$1 to $1.30 per bushel.
White Doyenne :		
Firsts	$4.50 per bbl. ($1.80 per bush.).	None.
Seconds	$3.25 per bbl. ($1.30 per bush.).	$2 per bbl. (80 cts. per bush.)

Without counting the cost of the extra packages and handling of the increased yield, the gain for treatment of the Seckel variety was from $4.77 to $5.57 per tree, and the White Doyenne $6.10 per tree. The cost of treatment for six applications was 55. cents, and for five applications 47.6. The total gain per hundred trees from the spraying varied from $423.10 to $562.40. The increased value of the fruit does not express the entire gain, as the foliage of the sprayed trees was much more healthy than that of the unsprayed, and the sprayed trees made a much better growth.

APPLES FOR HAMBURG.—Mr. James Thom, Manager of the Hamburg American Packet Co., writes that he understands Canadian apples have been sent to Liverpool and London, and thence to Hamburg. Why should this be, when they can be sent direct to Hamburg by this line, and at less charges ?

Pride of the Hudson Raspberry.—Samples of this berry were received to-day, July 18th, from Mr. John Arnold, Paris, Ont., and, though by no means new, it may be worth reviving as a dessert variety. The fact is that varieties of ordinary quality like the Cuthbert, the Golden Queen, and the Marlboro, often bring such low prices in our markets, that it may pay to aim more for quality than quantity even in commercial gardens.

Mr. Arnold writes of this berry :—" I purchased it from Mr. E. P. Roe, over twenty years ago, and have grown it ever since. It is hardy, repays liberal treatment, and is a good bearer. It retails here (Paris), for 15 cents a quart when other varieties bring only 8 or 10 cents."

Selby's Seedling.—Mr. Selby, of Newcastle, Ont., sends us several seedling strawberries (July 17), and his No. 1 is quite promising, judging from the samples forwarded. It is a large, globular, of a light red color, and good quality. We would advise Mr. Selby to send some plants to our experiment stations for careful testing.

Question Drawer.

The Hollyhock Rust.

662. Sir,—I have a great collection of double hollyhocks, and some disease or insect is spoiling all the leaves. They blister on the back, and the leaves spot and wither, beginning at the bottom and upward, till near the flower buds. Please tell me the cause and cure.

D. Campbell, *London South, Ont.*

Reply by Prof. John Craig.

The hollyhock leaf which you forwarded me from Mr. D. Campbell, is affected with a fungous disease known as "Hollyhock rust," technically called *Puccinia malvacearum*, Mont. This rust attacks most forms of the cultivated hollyhock, causing the leaves to shrivel and fall off. I do not know of any effectual remedy which can be applied. The best practice would be to take off and destroy, with the fallen leaves, all the affected foliage. If the plants are severely attacked it would be well to root them up and destroy them entirely.

Fruitless Cherry Trees.

663. Sir,—I have some cherry trees eight years old which have not yet yielded a good crop of fruit. Though there has been plenty of bloom, the fruit after setting dropped off, when about the size of a pea. On one tree I noticed a number of insects, similar to ants, but about three-eighths of an inch long, and the body partly black and partly reddish brown. Later I noticed that the leaves began to curl, and under them were many small black insects.

An Inquirer, *Vancouver, B.C.*

Cherry trees seem somewhat susceptible to injury by sudden changes of weather. The dropping off of the young fruit is a frequent occurrence with us in Ontario, owing, no doubt, to the somewhat unfavorable conditions during the time of blossoming, which prevents proper fertilization. This has been especially noticeable during the present season. The long, cold, wet weather during blossoming was succeeded by a very hot and protracted drouth, resulting in the blighting of the young fruit, which was strewed on the ground in immense quantities, and left but a small crop to be harvested, even on our older and more vigorous trees.

The insects of which our correspondent speaks are probably the larva of one of the lady bugs. This insect is a friend of the fruit grower and should not be destroyed on any account. He visits the trees to devour those very troublesome black insects which he speaks of as being found on the under side of the leaves in such large quantities, and which are known as aphides. If the larvæ of the lady bug are sufficiently numerous they will entirely rid the trees of the aphides, but otherwise it will be necessary to spray with kerosene emulsion

Black Knot on the Hickory.

664. SIR,—I send you a branch of a hickory tree with two knots upon it. Would you please let me know whether it is the same as the black knot on the plum? The tree is covered with knots, and I am anxious to know whether there is danger of its spreading to other trees.

D. L. CARLEY, *Windsor.*

Reply by Professor James Fletcher, of Ottawa.

I have examined the knot on the hickory branch sent by Mr. Carley, of Windsor, and it certainly is not the black knot of the plum. Judging from the dead gall, I believe it is caused by one of the gall mites of the genus Phytoptus. If Mr. Carley would send one of the young galls we shall probably be able to identify it.

The Cigar Case-Bearer.

665. SIR,—Please name the enclosed insect, which has been destroying the leaves on my apple trees. They appeared on the leaves as soon as the buds began to open, and tre still working destruction to the trees. Our Greenings suffer most. How long will rhey continue to work? If you will tell me all that is known of them and give me a aemedy I will feel much obliged. A. P.

FIG. 688.

Reply by Prof. Jas. Fletcher, Central Experimental Farm, Ottawa.

The specimens sent in your letter of 23rd inst., are the Cigar Case-bearer(*Coleophra Fletcherella*) of the apple. This insect is difficult to treat, and has been very abundant in some places this year. The most successful treatment is spraying the apple trees early in spring, with kerosene emulsion. Spraying with Paris green has had some beneficial effect, but not so much as I had hoped.

[We show cut of an allied species, viz., the Apple tree Case Bearer.—ED.]

Planting Strawberries.

666. SIR,—Please give me some information about planting strawberries.

A. F. *Hamilton.*

The most important consideration is the choice of soil. A light sand, especially if high and dry, will be too much affected by the severe June and July drouths to yield paying crops. Heavy clay, if subject to hard baking, is also unsuitable. On the whole, a deep, rich, sandy loam, somewhat moist, will be most favorable. The ground must be well worked up before planting. All the

better if it has been previously devoted to a potato crop, for the working up and manuring necessary for this crop will be the best of preparation. The ground must be well enriched, and, when well cultivated and harrowed, should be marked in rows three feet apart with a corn marker. In these rows the plants are set one foot apart. They should be carried to the field in a basket covered with a damp cloth. A man opens the earth with a slanting cut of the spade, while an assistant spreads out the roots and places them in the opening. The spade is then withdrawn, and the earth, falling back, is firmed with the foot, and the plant is securely and well planted.

Open Letters.

Fruit Shipments to Australia.

SIR,—I am in receipt of your letter of the 23rd of February, concerning apple shipments to this market. California apples come here in considerable quantities in October, November and December; the first two months are best. They are put up in cases of about one bushel each and each fruit is wrapped in tissue paper. The fruit brings about 12/ to 14/ a case. The varieties which sell best are Winesap, New York Pippin, American Pippin. This market does not want large apples; medium sized fruit sells best. I would suggest half barrels, and not barrels. We have never had apples here in any other packages than cases, and it is difficult to say how they would take in half barrels. In any case I would advise only one small shipment to be sent, to arrive here, say in November, and see how the cost landed compares with that from California; how they carry, etc. The cost would, of course, very much depend upon the railage at Vancouver. If the Canada Pacific Railway wish to encourage traffic, they will have to make their rates low. My own opinion is that, if the fruit arrives here in sound condition and the cost is not greater than from California, there will be a business done in them. The first shipment must necessarily be an experiment.

I am, sir, faithfully yours,

J. S. C. SMITH, *Gov't. Agent.*

Sydney, New South Wales.

Killing Burdocks with Kerosene.

SIR,—From seeing an article in your July number on "Weed Destruction," I am induced to mention to you a method of getting rid of burdocks which when carefully done has been found almost infallible. Cut off the top of a large burdoc, even with the ground, with a knife scoop out the heart of the root for a couple of inches and fill the cavity with *coal oil;* the larger the plant the deeper the cavity may be made, of course taking care not to cut through the rind of the root, otherwise it would not hold the coal oil which is absorbed by the root and which effectually prevents its sprouting again. Young plants are best treated by pulling up the entire root. Hoping the above may prove useful to some of your readers,

I remain, yours truly,

July 13th, 1894. L. GILDERSLEEVE, *264 King St., Kingston.*

ELBERTA PEACH.

One of the largest and most esteemed of all yellow fleshed peaches ; tree vigorous and productive ; a valuable acquisition.

THE

Canadian Horticulturist

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THE ELBERTA PEACH.

SO far as we know, the Elberta peach has not yet been fruited in Canada. It may, therefore, be classed with us among those novelties which may not be well adapted to our climate, or which may be over-praised by interested parties. But peach growers in Canada should be abreast of the times in their own line, and, since this variety is receiving so much attention from planters in the Southern and Middle States, where it is looked upon as the "coming peach," it is important that we give it a thorough trial in Canadian peach orchards also. In the South it is being planted more largely than any other peach; in the State of Georgia there are reported to be orchards of 100,000 trees of this variety alone. The Report of the New Jersey Horticultural Society speaks highly of this peach for that State, and so does that of the New York State and the Illinois Societies. In the Report for 1893, p. 51, we read:

"Elberta is another good peach. It is yellow, with a fine red cheek—a beauty—good quality, hardy and productive. It contains about all the good points one could desire in a peach."

In the Report of the Western New York Horticultural Society for 1892, Mr. Hooker said, "The Elberta peach is attracting a good deal of attention. It is a handsome peach, but I am not sufficiently acquainted with it to speak about it. I have planted about 15,000. They ripen with the late Crawford. I think there is no trouble about ripening them in this section."

The Elberta is a seedling of Chinese Cling, but entirely free stone. It was shown at the World's Fair by the State of Illinois, and the fine specimens attracted considerable attention.

PROMINENT CANADIAN HORTICULTURISTS.

MR. W. W. HILLBORN.

Experimenter in Peaches and Strawberries at Leamington.

IN the last number of this journal we gave some account of our visit to the Leamington Fruit Experiment grounds, and now we will give the experimenter himself an introduction to all our readers.

Though born at Sparta, Elgin County, in 1849, his early life was spent at Arkona, in the County of Lambton, then almost a wilderness. Here, while quite a boy, his interest in small fruits was awakened in gathering wild raspberries, and noting the evident difference in the fruit, especially in the black caps. When old enough to experiment, he began by testing those wild black caps in the garden. His plan was to mark a large number of the best plants, while in fruit, and transplant these in autumn into rows alongside the Mammoth Cluster. He found that those wild varieties were not as hardy as that variety; nor did they succeed as well when transplanted to the garden, as they had done in the wild state.

FIG. 689.—MR. W. W. HILLBORN.

Fig. 690.—Mr. Hillborn's Strawberry Grounds.

His next experiment was in the raising of seedling Black caps ; at first he grew only a small patch, but afterwards extended this experimental plot to two acres. In this he was well rewarded by one plant which was selected from the rest, and which is now known among all fruit growers and nurserymen on the continent as "The Hillborn."

Since that time Mr. Hillborn's attention has been very closely directed to the strawberry, both experimentally and for profit. In all he has tested at various times nearly two hundred named varieties, besides a large number of seedlings.

The accompanying view of Mr. W. W. Hillborn's strawberry plantation at Arkona, was drawn in 1884, and appeared in the Farmer's Advocate at that time. The sketch will also fairly well represent his present experimental plot at Leamington.

On the establishment of the Dominion Experimental Farms, Mr. Hillborn was appointed Horticulturist, and began operations at the Central Experimental Farm, Ottawa, with a force of about sixty men. After two years of experience in this position, Mr. Hillborn resigned, and purchased a farm near Leamington, in the County of Essex ; a farm consisting of about seventy acres, which he devoted largely to the peach, cherry and plum, selecting most of the good old varieties, and many of the newer kinds. Six acres were devoted to the strawberry, and besides, there were planted quite a collection of varieties of other small fruits. These conditions all combined to commend Mr. Hillborn to the Minister of Agriculture as the most suitable person in Southern Ontario to conduct experimental work with peaches and strawberries ; and from his experiments we hope for speedy results, which will be of direct value to Canadian fruit growers.

A CONVENIENCE IN FRUIT GATHERING.

Designs for fruit ladders are legion, some good, some bad, and some indifferent. The quadruple stepladder here illustrated must be classed among the good designs, for obvious reasons. Placed under low, branching trees, its use permits one to move about within reach of a large portion of the whole side of a tree, because of its four sides, about which one can freely step. Moreover, when not occupied as "standing ground," the top affords an excellent resting place for the basket. It will be found exceedingly convenient for the home orchard, where one may desire to pick but a basket or two of fruit at a time, and wishes to make a selection of those in the best condition for picking. It should be made strong, but light, so as to be readily moved about.—American Agriculturist.

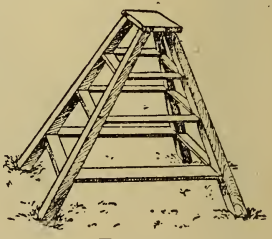


FIG. 691.
QUADRUPLE STEPLADDER.

GOOSEBERRIES IN 1894.

OR the general good, I take the liberty of reporting my season's operations. I am a gooseberry grower exclusively, except for home use. I am persuaded that this is the only cure for glutted markets with fruit of inferior quality and all its train of consequent evils. I saw strawberries sold in Toronto at 4c., and it was all they were worth.

My gooseberries were sprayed with liver of sulphur before the leaves came out, and at intervals of two weeks till the fruit was out of danger, with the result that not a speck of mildew appeared upon either fruit or foliage of any variety—even Whitesmith was perfectly free. Some varieties are now attacked on the tips or new growth.

Downing averaged 5 quarts to the bush all around, and sold readily at 6c.

Pearl, about the same as Downing in yield, but the bush is a more vigorous grower, indeed, in this respect it has no peer except Champion.

Champion gives promise of being an enormous yielder of large fruit, *i.e.*, larger than Downing. No sign of mildew on bushes not sprayed.

Whitesmith sprayed gave fine, clean, large fruit.

Queen gave a few specimens on spring-planted bushes—large, yellow and good; very vigorous grower.

Autocrat did well as usual; fruit very large.

Chautauqua seems to be vigorous.

Triumph, vigorous.

Red Jacket, killed back to the ground last winter but came again from roots this spring vigorously.

Lancashire Lad bore a fine, large berry tinged with red, and of splendid quality.

Sprayed again to-day with liver of sulphur for mildew on fall growth of foliage.

I may say I sprayed Downing early in the season with Bordeaux to prevent rust, with the intention of spraying at intervals all summer, but at second spraying my sprayer—a cheap knapsack one—gave out by the bursting of the bulb.

I learned two lessons from this experience; first, that these cheap machines have not force enough; second, that carrying 22 quarts of water on one's back is not funny by any means. I shall, therefore, have to find some other way of getting the liquid about.

A keg and wheelbarrow with a light force-pump seems to be about what is required where no horse is kept and not many large trees to be sprayed.

The two sprayings seems to have prevented rust to a large extent.

Another point I should like to mention. The foliage of my bushes were badly burned in the spring, and I hardly know what to blame for it. At first I

attributed it to the liver of sulphur, but afterwards sprayed a couple of bushe with this mixture made double strength without any bad effects. I, therefore, conclude that it resulted from one of two causes : either the lime of the Bordeaux mixture—made by the old formula, 6 lbs. blue stone with 4 lbs. lime, to 22 gallons of water—was not strong enough or not enough used, or the Bordeaux mixture and the liver of sulphur, which were both on the leaves at the same time, produced a new compound with the bad effects named.

Neither of the mixtures had its usual appearance on the foliage. A few minutes after spraying the liver of sulphur turns white like soap suds usually, but when the Bordeaux mixture is added it turns the liver of sulphur to a substance resembling iron rust ; but I shall try it again on a few bushes and report.

Nantye, Ont. STANLEY S. SPILLETT.

UNFERMENTED WINE.

Mr. E. Hulse not long since read a paper before the Victoria Vegetable Commission of Australia, regarding the use of unfermented grape juice, from which we make the following extract : The grapes are picked when they are fully ripened and the juice extracted and bottled as soon as possible afterwards. The bottles are filled brimful and placed up to their necks in vats of hot water within ten degrees of the boiling point. When the must is as hot as the water, the cork is forced into the bottle, expelling a portion of the liquid. If the least portion of air is left between the cork and the liquid, the oxygen contained in the air will set the saccharine matter in the wine in motion and fermentation will ensue. When the cork is forced into the bottle, the liquid is in a state of expansion from the heat. As it cools it contracts, leaving a vacancy between the cork and the liquid ; but the vacancy must not be an atmospheric chamber. The cork must, of course, be thoroughly air-tight. If fermentation does set in. it may be driven off by reheating the wine. The bottles are then laid on their sides in a cool place and the organic foreign substances must be allowed to settle, so that the liquid may become clear. The settling may occupy whatever period the manufacturer chooses ; sufficient time should, however, be given. The wine can lie six months or a year without damage. At the end of the settling period, it should again be filled into bottles, the sediment being left behind. These bottles must be brimful, and should again be set in vats of hot water, heated up to the same degree and corked in precisely the same manner as at first, using sealing wax to exclude the air. The wine is then left to cool in the ordinary way, and must be put away where the temperature is even and cool. It is now ready for use, and will keep just as long as it is kept free from contact with the atmosphere. This makes a very delightful beverage, which is entirely free from alcohol.

A SCALE INSECT ON OUR PLUM TREES.

LAST June the writer found a new and peculiar scale insect on his plum trees. Soon after in the Garden and Forest there appeared the following illustrated article, by Prof. Beach, of Geneva, which evidently refers to the same insect. Our readers should be on their guard against it, for it is evidently invading the best plum orchards of the Niagara peninsula.

Prof. Beach says :—A scale insect which has hitherto been considered a comparatively rare species has recently attracted attention by its attacks on plum-trees in New York State. One man from Niagara County

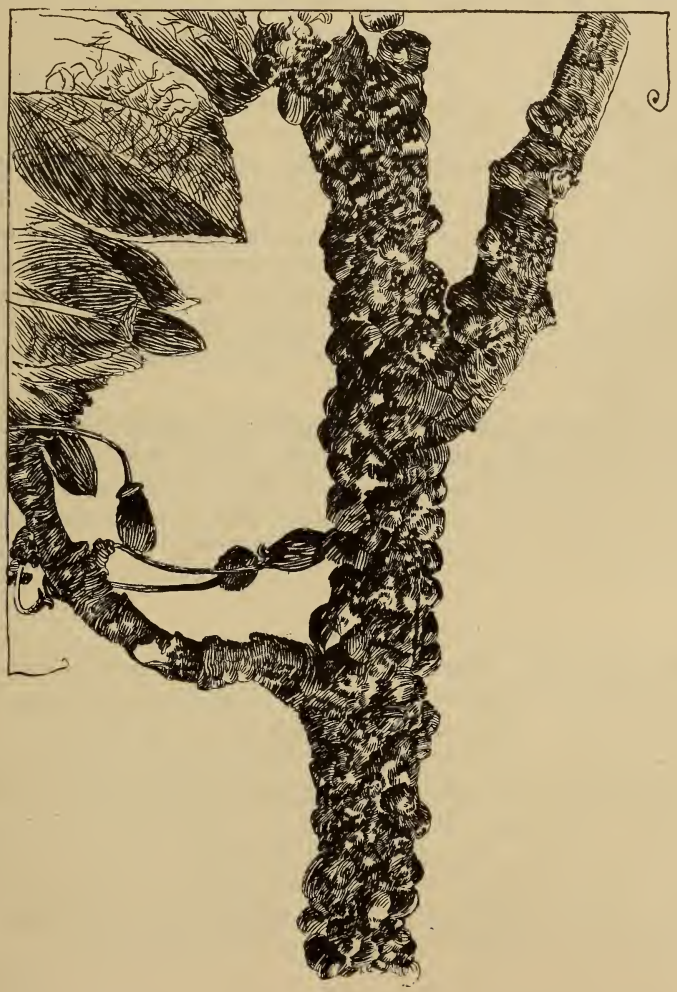


FIG. 692.—BRANCH OF PLUM INFESTED WITH SCALE, LECANIUM CERASIFEX.

reports that some of his plum-trees have been killed by it, but no instances of this kind have yet come under my observation. When it occurs in such numbers as to nearly cover the bark, as shown in Fig. 692, there can be no doubt that it is capable of injuring the trees. This illustration is from a photograph of an infested branch of the Bradshaw plum. On the twig at the right are seen scars showing where some of the scales have been removed. The actual length and width of a full-grown scale is indicated by the cross lines in the illustration. The dimensions are usually about five millimeters by four—that is to say, about seven thirty-seconds by five thirty-seconds of an inch.

At the present writing, June 20th, the scales are filled with a whitish powder, which, examined with a lens, proves to be composed of eggs. The young lice which are produced from the eggs in the spring had already issued from the old scales this season about May 10th, when my attention was first called to the insect. The branches were then covered with a sticky substance like honey-dew, evidently secreted by the young insects. On leaving the old scale they crawl over the branches till, finding a convenient location, they attach themselves to the bark. They seem to prefer a location on the under side of the limbs. At first they are whitish, or nearly transparent, but gradually assume the dark reddish brown color of the mature insect.

Mr. L. O. Howard, the United States Entomologist, to whom specimens were submitted for identification, states that it is a somewhat rare species known as Lecanium cerasifex. He advocates spraying with dilute kerosene emulsion when the young insects first appear in the spring. The scales are soft and easily loosened from their attachment, and might readily be brushed or scraped from the larger branches.

Thus far I have seen the insect in Niagara, Monroe and Ontario Counties, indicating that it is quite widely distributed in Western New York. So far as I have observed, plums are most seriously attacked, though the insect has also been found on apple, pear, maple and cissus, showing that it has a wide range of host plants.

Pear leaf blister mite.—Prof. Sleugerland, of Cornell University, has discovered a simple remedy for this mite, in the application of kerosene emulsion. In September, 1892, 16 trees were selected and labeled, and in March, 1893, were sprayed with herosene emulsion diluted with from 3 to 10 parts of water, 2 trees being left as checks. On July 10, the 2 trees which had not been sprayed were badly infested. The results on the others showed that the emulsion was effective when diluted with not more than 8 parts of water. The author concludes that the pear leaf blister can be nearly or entirely exterminated in a badly infested orchard by a single thorough spraying of the trees in winter with kerosene emulsion diluted with from 5 to 7 parts of water.

REPORT ON NEW AND OLD VARIETIES OF STRAWBERRIES FOR 1894.

AS is my custom, after the bearing season is over, I wish to let you know how the strawberry has done here. They came through the winter in good condition; the spring opened warm, and plants grew rapidly, then came a spell of rain and very cold, which seemed to stop their growth. The frost in May did serious damage to the crop of strawberries here, destroying fully one-half. The early varieties suffered most; medium and late did fairly well. Of the largest berries I ever had, the "Woolverton" excelled itself. We had plenty of them that sixteen berries would fill a box; they were the largest berries ever brought to St. Marys, except No. 44.

Was it the repeated cold rains during their blooming for a certain period, or the late frost, or both of them? One thing is certain that the crop, with a few exceptions in variety, did not give the amount of fruit we expected from its appearance early in the season.

I am still of the opinion that the difference in time of blooming at times makes the main difference in the crop.

Notice what the R. N. Yorker says:—"A berry is no longer valuable because of its earliness alone. It must have size and quality." It also says:—"Brandywine is the best late berry we know of, good shape, good quality, firm and productive."

Mr. Crawford says his experience with the Brandywine is that it is one of the best in all respects that he has seen, "It has no weak points. The plant is large, healthy, vigorous and productive; the blossom perfect, fruit large, bright red, firm and good.

The originator of the Brandywine picked this year 200 bushels of berries from Brandywine plants on one acre of ordinary land, and sold them in Philadelphia for 17c. a box.

Of the new varieties sent me for testing in 1893, and fruiting this year, a report would be no criterion as to their value owing to this very unfavorable season. From C. C. Stone, No. 1, Gertrude and Plow City, are very promising. His No. 4 and Governor Fifer need further testing.

Two varieties from Edward T. Ingram—Glen Mary and Brandywine—fruited once, both promising. Brandywine especially, although all the bloom being killed, its vitality enabled it to bloom again and give a fair crop of large, handsome berries. It is a late berry and staminate.

Thompson's Rio, 64 and 88 did well considering the season.

From M. Crawford—His Margaret Staples and Annie Laurie are large in berry, with a healthy plant.

From S. H. Warren, Mass.—Sam, a healthy plant and free runner.

From G. Beede, N. H.—Fremont and Kentzill.

From J. Lippincott, N. J.—Isabella, a good plant maker.

Tennessee Prolific, Columbia, Laxton's Noble, Mary, Henry Ward Beecher, Splendid, Bisell, with the best of the old varieties I still retain, having discarded most of the varieties giving small berries.

To me it seems a useless task to repeat the reports of previous years of well known and approved varieties.

Those that have done fairly well this season here are Woolverton, Saunders, Ivanhoe, Robinson, Smith, Shuster's Gem, Nehring's Gem, Putnam, Auburn, Gillespie, Greenville, Bubach No. 5, Mrs. Cleveland, Eureka, Judsonia.

Commenced picking June 13th, finished July 11th.

Granton, July 27th, 1894. JOHN LITTLE.

GRAPES IN JANUARY.

Without special precautions beyond storage in a cool cellar, I find that I can have the following grapes for eating in midwinter; Pocklington, Diana, Herbert, Duchess, Amber, Iowa, Jefferson, Lady Washington, Vergennes, Goethe, Isabella, Catawba, Niagara, Hayes, Diamond, Gærtner and Worden. Concords have kept well with me as late as the end of December. The grapes were carefully handled in picking, placed in new sweet baskets, about half-filled, and set at once in bins in a cool, dry cellar. At the approach of cold weather I aim not so much to have the room cold as to have an unvarying temperature for the grapes, and a piece of thick brown paper is tied close over each basket. The quality of the Worden is unsurpassed, and this variety supplies a delicious winter grape up to mid-December. Duchess, if picked before cracking, keeps well, and I had Brighton in good condition in December, when it dries into a very good raisin.

There are enough good grapes which ripen in August, September and October. The need is for long-keepers. Of those we now have, Amber and Diana are excellent; but Amber is one of the class of very tart grapes, like Greins' Golden, and is relished by few. Goethe and Iowa should be ranked as November and December grapes, and there is nothing to excel them. Herbert is another satisfactory grape, of excellent quality and a fine keeper. Vergennes, although keeping well, lacks in quality, and is at no season a grape of much value. It is a curious fact that some of the thin-skinned grapes are among the best keepers. Goethe, Iowa and Worden are thin-skinned, while Diana, Herbert and Vergennes are much thicker.—Garden and Forest.

THE SANITARY RESULTS OF A FRUIT DIET.

THERE has been much said and written on the health-preserving results of a free use of fruit as a diet, that it would seem as though there was nothing more of interest to advance on that topic. Yet it may be pardonable to throw out some thoughts at the risk of repeating what has been said, and that with a hope that some at least might be profited by the effort. *As a rule* we need not expect the regular practising M.D.'s, to recommend preventives to disease, and set forth precautions to preserve health, when it puts money in their pockets to keep people comfortably sick; and if there is anything set forth by which you can "save a doctor's bill," by any one, if it must come from some one outside of the medical craft, if we may make some allowance for the honorable exceptions. The great majority of the "ills that flesh is heir to," arise from disordered stomachs! Indigestion is the great barrier to the happiness and welfare of a large proportion of the human race, especially that portion distinguished for "masterly inactivity," or those who are averse to manual labor. The out-of-door workingman is seldom dyspeptic, but these of sedentary habits, and who are closely confined indoors, must suffer more or less with inaction of the stomach and bowels, unless their diet is made up of fruit of some kind. The cooling effects of its use in the blood, and its stimulating power in the stomach, bowels and kidneys, render it almost indispensable in the warm months of the year, and it also comes in as a boon adjunct in the winter season, to add zest and interest to a well-ordered repast. Who has not proved the profitable and invigorating results of eating freely of baked apples? They are real M.D. starvers, as also are strawberries, sugar and cream, raspberries and ditto, and other fruits in their season. As there is a marked sympathy between a well-ordered stomach and a clear-acting brain, it becomes a matter of great concern, in the management of all institutions where level-headedness comes into play, that a healthy sympathy be maintained, and if the larger proportion of the diet is required to be fruit to preserve that desirable condition, why, of course make use of it, provided you can get it at a fair price. Apples at 50c. per bushel, strawberries at 8c. per quart, and raspberries at 10c., are a cheaper diet than all bread at 7c. per loaf, meat at 10c. per pound, and other things in proportion, when we add the *ennui* and doctor's bills to the other part of our estimate. Happiness in this world after all, is made up of keeping the physical, intellectual and spiritual organisms of our being, rightly balanced (of course including a well-balanced debit and credit account), and if this balance so much includes the physical end of our enjoyment, it certainly behooves us to preserve that, by *a free use of fruit.*

A habit of mental activity by reading and conversation, will keep our intellectual machinery in good repair, while meditation, Scripture reading and daily habit of secret prayer, will add much to a preservation of our spiritual status; but with all this, if our brains are clogged with venus from a sluggish

circulation, in consequence of infirmities arising from a dyspeptic stomach, and constipated bowels, why, of course, the only remedy is to stop eating at all, or, eat plenty of fruit! Although this strain of putting things may savor of the humorous, yet there is a deeply serious aspect to the case, when we reflect on what momentous conditions are dependent upon apparently trivial and commonplace practices.

The heavenly and the earthly, the spiritual and the physical, the thoughtful and material, are all so inseparably connected, that we cannot, in our highest flights of meditation and exaltation, lose sight of the need of keeping the bread-and-butter side of existence in good tone as a necessary adjunct to our daily meals. The fruit-growing fraternity then, if not entitled to the initials M.D., are surely claimants, and rightly so, to the title of P.B., as public benefactors. And although not counted on the high social plane of the *learned professions*, still that is no reason why we should not be, and while

> "Along the cool sequestered vale of life,
> We keep the even tenor of our way,"

we can rejoice in the happy inward consolation, that though we are not basking in the full blaze of public admiration, we fill a little niche of usefulness that even more pretentious organizations might be proud of. Further, the deponent saith not.

L. FOOTE.

The Bordeaux Mixture was applied by the Kentucky Experiment Station with the following result: Throughout the summer the trees to which the mixture was applied were more thrifty in appearance, owing to the more healthy green and better general state of the foliage. In every case the leaves began to fall sooner from untreated than from sprayed trees. The proportion of fruit rotting to that not rotting was in every case lessened. Spraying with the Bordeaux mixture will save from rotting 7 to 31% of the whole number of apples. The average increase in crop due to spraying was 97 lbs. of fruit per tree. This increase was due to several causes, among which may be mentioned the saving from rot and the prevention of scab on both foliage and fruit, thus increasing the size of the fruit. To test the relative keeping qualities of sprayed and unsprayed fruit, 100 apples free from scab were selected from those that had been sprayed, and an equal number of scabby apples from those that were not sprayed. The apples were stored Oct. 30, and examined at frequent intervals, the rotten fruit being counted and removed from each tree. It was found at the end of two weeks that there were nearly three times as many rotten apples among the unsprayed as among the sprayed. There was somewhat less difference between the two lots later in the season, but the sprayed kept better than the unsprayed, and kept longer. In every case some of the sprayed were sound when all of the unsprayed had rotted.

DWARF PEARS.

SIR,—Please give me some hints on Dwarf Pear growing.

H. O. WELLBURN, *Duncan, B.C.*

CERTAIN varieties of pears seem to succeed best on quince stock, for instance, Louise, Duchess, Easter Beurre, Beurre Diel, Glout Morceau and Vicar. Such trees are known as dwarfs, because they never attain the size of trees grafted on pear stock, and are kept closely pruned into bush form. While twenty feet is a suitable distance apart for standard pears, dwarfs may be planted about twelve feet apart. The soil should be well drained, and not too heavy, as the quince root, on which they are grafted, will not endure wet soil, but will soon succumb when placed in such conditions, especially when subjected to the winter's cold. Good cultivation and enrichment of the soil must never be neglected to attain the best results; but perhaps one of the most important points to be studied is the art of pruning.

The Dwarf pear needs especial care in this respect. Every spring about two thirds of the young growth of the previous year should be cut off, and as

FIG. 692.—A WELL PRUNED DWARF PEAR. (Engraved from "The Garden.")

much more as may be necessary to keep the tree in that pyramidal or conical form usually considered the proper shape for a dwarf. In addition to this a system of pinching back the young growth in summer time, after it has grown a few inches, and thus causing fruit spurs to be formed, which otherwise might have produced leaves only.

As to the extent of the spring pruning, Mr. Thomas advises that dwarf pears should not be allowed to exceed ten or twelve feet in height, and six or seven feet in diameter at the base.

THE UNITED STATES FRUIT TARIFF.

FRUIT growers in Canada will watch with some interest the changes in the United States tariff, so far as it affects their business. While, as a rule, our apples go to the British markets, or to the North-West, there are seasons when our best apple market is Chicago, and when even Philadelphia calls for Canadian apples. Especially is the Canadian Northern Spy and Montreal Fameuse wanted in these markets, but the duty of 25 cents a bushel has been almost prohibition. This is now reduced to 20 per cent., which, considering the low value of apples, will open these markets to us. The following shows the tariff changes, so far as fruit is affected :—

FRUITS AND NUTS.	Old rate.	New rate.
Apples, green or ripe, per bushel	25c.	20 p c
Dried, desicated, evaporated, or prepared in any manner, per pound	2c.	20 p c
Dates, green, ripe, or dried	Free	20 p c
Preserved in sugar	35 p c	20 p c
Grapes, per barrel of 3 cubic feet, or part thereof	60c	20 p c
Plums and prunes, per pound	2c	1½c
Comfits, sweetmeats and fruits preserved in sugar, syrup or molasses, n. e. s., prepared, desicated cocoanut or copra and jellies of all kinds	35 p c	30 p c
Fruits preserved in their own juices	30 p c	20 p c
Orange peel and lemon peel, preserved or candied, per pound	2c	30 p c
Almonds, not shelled, per pound	5c	3c
Clear almonds, shelled, per pound	7½c	5c
Filberts and walnuts of all kinds, not shelled, per pound	3c	2c
Shelled, per pound	6c	4c
Peanuts, or ground beans, unshelled, per pound	1c	20 p c
Shelled, per pound	1½	20 p c
Nuts of all kinds, shelled or unshelled, n. e. s., per pound	1½	20 p c

Prunus Simoni is just now ripening its fruit at Grimsby (August 11) A prettier sight could not be desired than one of these trees variegated with its fruit in various stages of ripeness from green to yellow and red, and dark red. Possibly it might command a ready sale in the markets on account of its beauty; but alas, for eating, it is worthless, and no one would buy a second basket unless for marmalade. Some were canned with considerable sugar, but were not much esteemed.

NOTES ON STRAWBERRIES.

THE season of 1894 has not been favorable for the strawberry in this locality. The early part of the season was favorable to their growth. Just as the fruit began to ripen dry weather set in, and continued until the whole crop was gathered. The continued heat and drought shortened up the crop fully one-half. Our first ripe berries were *Michell's Early*, and were gathered May 31st. This variety does not produce enough fruit to make it a profitable sort. Following soon was *Beder Wood;* this is productive, fruit above medium size, and taking all in all, it is perhaps the best first early berry. There is no first early kind that I have seen that quite fills the bill. *Crescent* is not quite so early as the above, but still continues to be the most profitable early sort, especially on strong soil. On a light, sandy soil it is not always satisfactory. For a market not too distant, *Bubach* has succeeded best with me. The fruit is very large, and such a bright red that it will bring a good price in any market. In a wet season it is not firm enough to ship to a distant market. This season it was shipped 200 miles and brought 13c. wholesale for the first picking. It ripens mid-season.

Gov. Hoard is about the earliest large berry, of good quality, and well worthy of very general trial. The plant is quite a strong grower, the fruit is large, dark bright red, quite firm, and better in quality than most varieties. *Saunders*, *Woolverton* and *Lovett* are all promising for market and home use, and should be more generally tested throughout the country. *Williams* is a new Canadian berry that yields a large crop of large fruit; it, however, has a green tip which is somewhat against it, although the fruit being large and of a bright dark red color, and produced in abundance, will make it a profitable late market variety. *Wilson* is still grown more largely than any other sort in this locality for market, and will, no doubt, continue to be for some time to come on account of its good shipping qualities. *Parker Earle* is one of the best late sorts for market or the amateur. It forms very large plants and but few runners; it is, therefore, well adapted to garden culture. It requires a moist soil, as it sets such a large quantity of fruit that it cannot bring it to maturity without plenty of moisture. *Middlefield* is a fine large berry of very fine quality, of attractive bright red color; plant very healthy and free from rust and quite productive; better for the amateur than for market. *Warfield* is a failure here, although it succeeds in many localities. The following table shows a description of twelve varieties of strawberries grown at this station.

STRAWBERRIES.

FRUIT STALK. Long or Short; above foliage or concealed by it.

SIZE. S.—Small. M.—Medium. L.—Large.

FORM. B.—Broad. C.—Conical. D.—Depressed. I.—Irregular. L.—Long. O.—Ovate. R.—Round.

COLOR. B.—Bright. C.—Crimson. D.—Dark. L.—Light. R.—Red. S.—Scarlet.

FLESH. F.—Firm. L.—Soft. M.—Medium.

SEASON. E.—Early. M.—Medium. L.—Late.

VARIETY.	PLANT.						BERRY.							VALUE. Scale 1-10		REMARKS.
	Sex.	Origin.	Foliage. Healthy or liable to rust.	Fruit stalk.	Vigor. Scale 1-10.	Productiveness. Scale 1-10.	Size.	Form.	Color.	Tenacity to Calyx.	Flesh.	Flavor. (See Thomas.)	Season.	Dessert.	Market.	
Bubach.....	P.	..	Healthy	Medium	8	10	L	B	L R	....	M	Medium.	M to L	8	10	For near market.
															4	For distant market
Beder Wood...	B.	..	Some rust...	Rather long.	6	8	M	R	L R	....	M	Medium.	E	8	8	For near market.
															3	For distant market
Crescent.....	P.	..	Nearly healthy	Medium	10	10	M	C	S	....	M	Medium.	E	8	9	
Captain Jack..	B.	..	Some rust, mostly healthy	Rather long.	7	6-9	M	R	S	....	M	Good.	L	8	8	
Gov. Hoard...	B.	..	Little rust....	Medium	6	7	M	C and D	D R	....	F	Good.	E	9	8	
Lovett.....	B	..	Nearly healthy	Medium	7	8	M	C	C	..	F	Medium.	M	7	8	
Middlefield....	P.	..	Healthy	Medium	8	6-8	M to L	C and B	B R	....	M	Good.	M	10	7	
Parker Earle..	B.	..	Nearly healthy	Tall	8	7-9	M	C	B R	....	F	Medium.	L	7		
Saunders.....	B.	..	Quite healthy.	Medium ...	8	8	L	C and D	D R	....	M to F	M. to good	M to L	8	8	
Wilson.....	B.	..	Sometimes rusts badly..	Medium	6	4-8	M	C	D R	....	F	M. to good	M	8	8 10	
Williams.....	B.	..	Some rust.....	Rather short	9-10	8-10	L	B D C	D R	....	M	Medium.	M to L	6	8 10	
Woolverton...	B.	..	Not much rust	Medium ..	7	8	L	B and C	B R	....	M to F	Good.	M to L	8	8	

CRAIGHURST EXPERIMENT STATION VISITED.

ON Monday, the 23rd of July, Prof. Hutt, of the Ontario Agricultural College, Official Visitor for the Dept. of Agriculture, and the writer, who is Sec. of the Board of Control of the Ont. Experiment Stations, visited Mr. G. C. Caston, the experimenter in apples and small fruits at Craighurst, twelve miles north-west of Barrie, in the County of Simcoe. It was a dusty ride along that sandy old Government road to Penetanguishene, but the beautiful glimpses of distant hills and water in the direction of Collingwood seemed to brighten the way and make it a delightful journey. Mr. Caston received us kindly and entertained us most hospitably, for Mrs. Caston is a lady of distinguished parentage, and understands the art of treating her visitors well.

Mr. Caston cultivates about fifty acres, besides having a bush of maple trees thirty-five acres in extent, from which he receives quite a revenue in maple syrup. He taps about 500 trees, and this season he made about 200 gallons.

Mr. Caston's apple orchard of five or six acres evidences the best of care and cultivation, but the climate is severe at this distance from the lake, and many varieties, quite hardy at Collingwood, fail utterly here. One feature of his place was especially notable, viz., a high board fence, about 14 feet high, all along the north-west side of his apple orchard, forming an admirable windbreak.

The most productive variety which grows in Mr. Caston's orchard is the Duchess; the trees were just loaded to the ground, and the fruit was clear and bright. Had Mr. Caston planted all his orchard of this one variety, there is no doubt he would have made far more money out of it; but his fondness for experimenting led him to planting many other varieties, and in some cases to top graft quite a number of kinds upon a single tree.

Mr. Caston has about 75 varieties of Russian apples under test, together with 30 or 40 varieties of strawberries, and numerous other plants, and to this collection yearly additions will be made by the Board of Control, in order to make this station as efficient as possible.

THE FALL WEB-WORM is just now (Aug. 9th) quite injurious to the foliage of the raspberries. This attacks nearly all our fruit trees and plants, but is easily subdued by cutting off the twigs or branches affected and burning them.

A THIEF REWARDED.—A thief in the act of breaking into a safe was greatly astonished on looking up to see a gentleman quietly watching his proceedings. He tried to escape, but the gentleman stopped him.

"Go on, my friend" he said. "I am greatly interested in your work."

"How is that?" inquired the astonished thief.

"Because I have lost the key to this safe. If you can open it, you shall be well rewarded for your trouble."—Arlequin.

THE MERCER CHERRY.

IN the report for the U. S. Pomologist for 1892, Mr. VanDeman's special attention is called to several new cherries from Oregon, among which was the Byng, a very large, sweet, black cherry, a seedling of Black Republican; also, one from New Jersey, called the Mercer, introduced by Mr. Black, of Highstown. This latter, the Mercer, is thus described by Prof. Van Deman: A medium size, irregular, heart-shaped cherry; cavity round, wide, irregular; stem medium length, rather slender; surface irregular, angular, glossy, bright red, with darker mottling and blotches; dots minute, depressed; skin rather thin, moderately tough; flesh pinkish, meaty; flavor sub-acid, lively, rich; quality very good Season in New Jersey, middle of June. Fruit in clusters; very productive; vigorous grower; original tree said to yield from 10 to 18 bushels per year.

The introducers say in their catalogue that this cherry is grown from a Mazzard pit, and surpasses in size the Black Tartarian. We will have this cherry tested at our Ontario Experimental Stations and report in due time upon its adaptability to this Province.

FIG. 693.—THE MERCER CHERRY.

Our Fruit Table.

THE JAPANESE WINEBERRY.

SIR,—I send you by this mail two bunches of the Japanese Wineberry. The bush from which they were taken is four years old, and has only two canes, on one of which there are forty-nine bunches of fruit, the majority being as good as the samples sent you. They have had no special care, except ordinary cultivation and a dressing of barn-yard manure. In the fall we lay down the canes and cover them with straw, for winter protection. They are very attractive, being universally admired, and in demand for planting on the lawn for ornament. H. L. BRYANT, *Mohawk.*

This is an interesting novelty. The branches sent us Aug. 2nd carried about fifty berries each, all very attractive looking. It has, no doubt, been over lauded by advertisers, and the plants have been sold at very high prices. It will probably have little value as a market berry, but for dessert purposes it may become popular, because of the peculiarly pleasant flavor of the fruit. Prof. Georgeson, late of the Imperial College at Tokio, Japan, collected the seed in that country, and sent it home to the United States. The canes are large, and stout, covered with purplish red hairs; the leaves are large, tough, dark green above, and very grey beneath. Each berry is at first enclosed in a mossy calyx, which turn back as the fruit matures. Berries are of medium size compared with the ordinary raspberry, of a pretty bright crimson color; flavor sprightly, mild acid.

The reports which we have received concerning this Wineberry are conflicting, so that we are not prepared to state anything definite concerning it.

An experiment station in Minnesota reports having tested it, and that it is unproductive; that the berries are small, and sour, and that it is hardy with protection.

Bulletin 88, Michigan, says the plant increases too rapidly by suckers to be very desirable for the lawn. The flowers are large and showy; but the fruit is of no practical value.

These statements seem hardly applicable in every respect to the samples sent us by Mr. Bryant, for the fruit was of medium size, good flavor, and quite abundant.

This plant will be planted for trial at the Ontario Experiment stations next spring, and will be fully reported on thereafter.

Blighted Apple Trunk—Mr. J. H. McGregor, Galt, writes that a Duchess of Oldenburg has its bark dead about a foot up from the ground, as if it had been scalded. Since the spring it has spread further up; he also sends a sample of the bark. Such blighting of the apple trunk often occurs, and arises from so many causes that without seeing the tree and knowing all the conditions one cannot reply. It may be the effect of the borer, of sun-scald, of wet, or of injury from frost, or whiffletrees.

The Burkholder Peach.—Mr. J. C. Burkholder sends us (August 24) four samples of a pretty seedling peach originating with him, which ripens about the 22nd instant. Coming in after Hales, and just before Mountain Rose which is just now (24th) beginning to ripen, this peach is worthy of notice. The fruit

FIG. 694.—JAPANESE WINEBERRY.

is of medium size, 1¾ inches long by 2 broad, roundish; skin cream, nearly covered with deep red; down heavy; cavity narrow and deep, suture distinct; flesh white, melting, juicy, good flavor; clings to pit, but not so much as Alexander.

Apricots.—Mr. J. F. Rathburn, of Drumbo, sends us some fine samples of apricots, rather small in size, but of excellent quality and high flavor. The tree is hardy and productive. It resembles the Breda.

Lillian Augusta Plum. — Mr. R. Trotter, of Owen Sound, sends us (August 24) four samples of a fine large seedling plum. It is 2 inches long by 1¾ broad; skin yellow, with evident bloom; cavity shallow; suture distinct; stem ¾ inch long; flesh yellow, juicy; pit large, cling; quality good.

Mr. Trotter says he was led to allow it to grow from the appearance of the leaf. Tree healthy, and productive.

Fruit for Name.—Dr. Harkness, of Lancaster, sends a summer apple (August 16) of somewhat the style of Colvert, but smaller. It first ripens toward end of July, and grew on a very old tree. Summer apples are so well furnished in Yellow Transparent, Red Astrachan and Duchess, that there is little place for this apple, whether seedling, or a named variety. Mr. Craig thinks it is the "White Astrachan."

Mr. A. Brooks, of Clarkson, sends an apple resembling the "Strawberry of Montreal," but which we cannot identify. It does not appear to be of much value, in competition with Duchess and Gravenstein.

Mr. J. A. Patterson, Hamilton, sends us three samples of fine yellow plums for name. They are the Washington, one of the most delicious varieties of its seasons.

Re-Forestation in France.—It is a common thought with us, that in the Old World, governments do everything,—and what these governments do for forestry is a common theme with our forest associations. But individuals and societies work in forestry also. The forests of Solagne, that were destroyed by the severe winter of 1879–80, have been replaced through the efforts of the Agricultural Society of France. In five years many thousands of acres have been re-planted. Pinus maritima is the kind selected for the work.

While it is quite generally conceded that posts set in the ground upside down will last much longer than in the reverse position, the why and wherefore of it has been a mystery with the general public. The reason is this: The pores of the wood are so constructed as to draw and push the moisture upwards from the roots to the leaves and branches of the tree, and this same principle of action causes the constant drying out of a post set reversely to its natural growth, while if set with bottom down the pores will constantly draw the moisture upwards, thus causing its premature decay.

The Garden and Lawn.

SUMMER CARE OF THE CALLA.

HOW to care for the Calla during the summer, in the most satisfactory way, seems to be a question on which many growers of it differ. Some keep it growing all through the year, and because it does comparatively well with this treatment, they argue that the proper way is to keep it growing. I do not agree with them, however, because I do not believe any plant ought to be kept growing actively all the time. There should be a period of rest. My plan is to put the pots containing the plants out of doors in June, turn them on their sides under a tree, or in some partially sheltered place, and there I leave them until September, without any attention whatever. After a short time, the foliage turns yellow, and very soon it drops off, because the soil in the pot is becoming dry. In two weeks after putting the pot out, you would not suspect there was a live root in the soil it contains. But the live root is there, all prepared. Of course the soil absorbs more or less moisture from the air, but not enough, in an ordinary season, to keep it from getting as dry as dust. One would naturally think the root would wither away, but it doe not. Although the soil about it seems robbed of all moisture, the root holds enough to retain plumpness.

In September I prepare a fresh compost of mucky earth, some sharp sand, and a little loam. If the roots are strong, good-sized ones, I use an eight-inch pot to plant them in. Good drainage must be provided, for, while the plant likes a great deal of moisture at its roots while growing, it does not take kindly to stagnant water about them. Keep the soil moist, or wet, by frequent applications of water, rather than by confining it to the pot by imperfect drainage. An imperfectly drained soil soon becomes sour and heavy, and this induces disease; and an unhealthy Calla seldom gives flowers. Plant the roots so that the crown will be two or three inches under the soil, water well, and in a short time young leaves will appear. Then give more water, but do not keep the soil very moist until strong growth has begun. If there are two or three good, strong roots, do not separate them, but give a larger pot, if necessary. I prefer to grow two or three roots of blooming size in the same pot, because the quantity of foliage will be much greater than when but one root is used to a pot, and there will be as many again flowers. If given proper care, a pot containing two strong roots ought to have at least one flower open and a bud showing nearly all of the time from January to April.—American Agriculturist.

Forestry.

FORMATION OF THE RINGS OF WOOD IN TREES.

THE many differences of opinion that even eminent men are presumed to hold in regard to the character of the so-called annual rings of trees, would be readily reconciled if a little thought were given to the manner in which wood is formed as the trunk is enlarged. This is accomplished by the birth of new cells, which proceed laterally from the old ones. The new course of cells take their place around the mother cells, and form a thin layer over them, just as if a sheet of writing paper might be wrapped around another. These in a few days again become mother cells, and another course is produced. This continues during the short time devoted to growth, perhaps a dozen times, and the mass of new wood known as the new annual layer, is really made up of a dozen fine layers so small that the concentric lines are only visible by means of a powerful microscope. Now the size of these cells depends on the amount of material at command. The original mother cell that starts the annual growth, has had the advantage of the best opportunities for stored nutrition, every successive addition is weaker and weaker, until the last growths of the season are very small. It is because they are so small and packed close together that we can readily see where they end, and thus detect the extent of the annual layer even in old trees. Now a tree may be in a position to have command over a superior stock of nutrition, and the cells are in a condition to avail themselves of the advantages, especially if the cells are naturally of a large size, as they are in some trees. In the European silver linden, for instance, the cells are one-fourth larger than they are in the common American linden; and in this and similar trees, a number of light rings can usually be traced in the annual increment. The same can often be seen in vigorous specimens of the cottonwood. But plainly as these lines may be seen, the experienced investigator can rarely be mistaken on the last line made during the growing season, and is able to tell how many years the tree has been growing on the spot where it stands. There is nothing more certain than that in the hand of an expert the age of a tree can be determined by its annual growths.—Gardener's Monthly.

ZINNIA HAAGENA.

I was only introduced to Zinnia Haagena this year, but am sorry I didn't make its acquaintance sooner, as it is a most desirable variety, all yellow, and much better for boquet use than the ordinary kinds. In the present craze for yellow flowers, everybody ought to have it. Anthemes Coronana fl. pl. is another yellow flower I think a great deal of. It is a very free-growing plant, abundant bloomer, and lemon yellow. Zinnia Haagena is orange.

Cornwall, Ont. C. W. YOUNG.

TABULAR STATEMENT IN REFERENCE TO THE REARING OF NURSERY STOCK.

Kinds of Trees.	Time of the year when Seeds are ripe.	Mode of Preserving Seeds till sown.	Quantities of Seeds.	Will Produce of Plants.	Manner of Sowing.	Depth at which Seeds should be sown.	Distance apart of Seeds when Sown.	Best age to Transplant from Seed-beds.	Best age to Plant out permanently
Oak	November	Should be sown soon after ripening	1 bushel	Farm 6000 to 8000, as to quality	In rows 18 in. apart	2 inches	1 to every three square inches	1 year	2 to 4 years
Elm	May and June	If not sown when gathered the seed will not braird till following spring	1 bushel	From 5000 to 7000	In rows 15 in. apart	½ inch	1 to every two square inches	1 year	2 to 4 years
Ash	End of October	In dry sand or light earth for 12 months, to rot the outer cot	1 bushel	From 12,000 to 16,000	In rows 15 in. apart	¾ inch	1 to every three square inches	1 year	3 years
Beech	End of October	In dry sand or light earth till spring	1 bushel	From 10,000 to 12,000	In rows 15 in. apart	¾ inch	1 to every two square inches	1 & 2 years	3 to 4 years
Alder	End of October	In a dry airy loft	1 lb. of clean seed	5000	In beds	¼ inch	1 to the square inch	1 year	3 years
Birch	October	In sand and slightly damp and regularly turned once a week	1 bushel of clean seed	From 15,000 to 18,000	In beds	½ inch	200 to square foot	1 year	years
Horse-Chestnut	October	Should be sown when gathered	1 bushel	From 2000 to 3000	In rows 18 in. apart	2 inches	1 to every four square inches	1 year	3 years
Sweet Chestnut	Usually imported.	Should be sown when procurable	1 bushel	3000	In rows 18 in. apart	2 inches	1 to every three square inches	1 year	3 years
Norway Maple	Beginning of October.	Should be sown when gathered or in the spring	1 bushel	From 0,000 to 15,000	In rows 15 in. apart	½ inch	1 to every four square inches	1 year	3 years
Sycamore	Middle of October	Should be sown when gathered or in the spring	1 bushel	From 10,000 to 15,000	In rows 15 in. apart	½ inch	1 to every four square inch s	1 year	3 years
Walnut	Beginning of October	Should be sown when gathered	1 bushel	From 4000 to 6000	In rows 18 in. apart	2 inch	1 to every square inch	1 year	3 to 4 years
Holly	November	Should be rotted in a heap with sand for 12 months	1 bushel of clean seed	From 15,000 to 20,000	In beds	¾ inch	1 to every square inch	2 years	5 years at least
Thorn Haws	November	Should be rotted in a heap with sand for 12 months	1 bushel of clean seed	From 15,000 to 18,000	In beds	½ inch	1 to every square inch	1 or 2 years	3 to 4 years
Scots Pine	November and December	When convenient should not be taken out of cones till sowing time	1 lb. weight	From 7000 to 10,000	In beds	¼ inch	2 to the square inch	1 or 2 years	3 to 4 years
Larch	November	When convenient should not be taken out of cones till sowing time	1 lb. of home seed	From 2000 to 3000 only, a large proportion being bad	In beds	¼ inch	2 to the square inch	1 or 2 years	From 2 to 3 years
Spruce Fir, Norway	November, seed generally imported	On shelves in a dry airy loft	1 lb. weight	From 8000 to 10,000	In beds	¼ inch	2 to the square inch	2 or 3 years	From 4 to 5 years
Silver Fir	November, seed generally imported	On shelves in a dry airy loft	1 lb. weight	About 500	In beds	½ inch nearly	2 to the square inch	2 years	5 years
Pinaster	Seeds generally imported	In a dry airy loft	1 lb. weight	From 500 to 800	In beds	¾ inch	1 to the square inch	1 year	From 2 to 3 years

—*The Garden.*

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THIS SEASON is, after all, little better than last, so far as the apple harvest is concerned. Last year was discouraging enough, for the apples failed, and the peaches and grapes were ruined with a terrific hailstorm. Fruit farming has greater possibilities of success than any other branch of agricultural life, no doubt, but it is also subject to disastrous failure, when frosts, and insects and fungi combine to destroy the magnificent prospects of the early part of the season.

THE BEST EARLY SUMMER PEAR is perhaps the *Beurre Giffard.* We have just finished marketing it (Aug. 10th). The Doyenne d'Ete was first to ripen, then the Chambers, the Osband's Summer, and the Beurre Giffard. The others are rather small, excepting Chambers, which is of fair size, but in quality, size and in beauty the Giffard excels. It must, however, be gathered just before maturity or it will rot at the core. *Elizabeth* is following it closely, a very small, but very productive, variety.

THE RED SPIDER is unusually troublesome on the currant bushes in some localities. Mr. Joseph Tweedle, of Stony Creek, brought us some leaves of the Red Cherry currant, which were sere and yellow, just ready to drop, through injury caused by this insect, which was in large numbers on the underside of each leaf, and so tiny as to be scarcely discernible with the naked eye. According to Mr. Fletcher, kerosene emulsion is the best remedy, using one part of stock-emulsion to twelve of water.

THE RIVERS PEACH is proving itself a valuable early variety at Maplehurst. No variety is more productive, the trees being laden down with fruit; it ripens

in a favorable time, the most of them being now ready for harvesting (Aug. 10), when the market is open for a better variety than the Alexander. Its chief fault is its tender skin, which is so susceptible to bruises. The prices for all early varieties are very low this year, because they come in competition with a better class of peaches from the West and South. Eight quart baskets are now selling in Toronto (Aug. 10th) as low as 20 cents each; but when our fine Crawfords are ready, those from the South will be out of the market.

Among our recent visitors was Senator MacInnes of Hamilton and Mr. G. R. Parkin, of Harwich, Essex Co., Eng., representing *The London Times*. After visiting the Maplehurst orchards they expressed themselves highly pleased with what they saw, as representing the fruit industry of Canada, which Mr. Parkin was desirous of writing up for English readers The great need, Mr. Parkin said, in order to make our apple export trade a success was *improved packages* for extra grade fruit, and an *Inspector's brand* in order to give confidence to the English buyer. Mr. Parkin had just returned from Australia, where he found extra grades of apples for the British market were packed in bushel boxes, each sample wrapped in tissue paper, and this kind of stock commanded a steady high price in London market. We explained to him how far our Association had succeeded in securing legislation on this subject, which provided for the grades and the brands, but lacked any grant of money, which was absolutely necessary in order to make the Act practicable, for no man would act as inspector without some assurance of support. Senator MacInnes thought that if this matter were written out in proper form, explaining just what was required, and placed in the proper hands at Ottawa, no doubt fruit growers would get what was required to make the apple export trade of Canada a success.

THE CANADIAN FRUIT BUYERS' AND EXPORTERS' ASSOCIATION recently held a meeting in Toronto at which the following resolutions were passed:

1. "Resolved, that the practice which has existed in the past, and which has become so general, of engaging assistants in buying and packing on commission should be discontinued, and in future all assistants and help shall be paid by salary, by the day, week, month or season, as can best be arranged, and any member of the Association found violating the same in the future shall be subject to the censure of the Association."

2. "Resolved, that we, as members of this Association, pledge ourselves not to purchase apples on the plan known as 'so much and the rise,' or to give what is called a bonus, and to use, so far as it lies in our power, the form of contract adopted by the Association."

3. "Resolved, that the members of this Association faithfully agree not to accept any 'shipper's count' or 'more or less' bill of lading when shipping apples, but to insist on clean bills of lading."

A standard of quality was also adopted, which is the same as that described in our 24th Annual Report, p. 66, viz., Grade No. 1 shall consist of well-grown samples of varieties named, somewhat uniform in size, well shaped, of normal color, free from scab, worm-holes, curculio knots, etc.

Shipping Apples.

667. Sir,—I have a fine sample of apples. I have sprayed my orchard five times with the Bordeaux mixture, and I think I will not have less than five hundred barrels. I do not wish to sell them at our usual price of $1.00 per barrel. What is the best method of disposing of them? Nearly all of them are the best winter varieties. I have seen suggestions in your paper concerning the shipping of apples in a special package holding about half a barrel. Do you know of any one who has had experience in this? Would you advise me to ship my own apples or sell to buyers? Is there an association formed for having apples inspected at the seaboard and sold direct.

J. C. Harris, *Ingersoll.*

Our correspondent has evidently proven the usefulness of spraying with the Bordeaux mixture, for in those orchards where no spraying has been done a large proportion of the apple crop is badly affected with scab and the trees are already losing their foliage. As a rule growers throughout the country do best to sell to buyers at a reasonable figure, because there is so much risk in shipping to Great Britain; either the grower does not understand packing them for the British market, or he fails in getting them carried through in good condition to the old country. There are parts of the ocean steamships favorable to the safe carriage of apples, and others, near the heat of the boilers, where they are often ruined on the voyage. Unless, therefore, one can become in direct communication with some steamship company and secure the best accommodation for his apples, there is a danger to them on the ocean voyage. Then again he needs to be in some communication with reliable salesmen in Great Britain. There are many of these, some of whom advertise in The Canadian Horticulturist, and, as a rule, providing the conditions referred to above are favorable, it will pay better to consign apples to such houses in Great Britain than to sell the best varieties to buyers here as low as $1.00 per barrel, especially in a season like the present one. There is no package yet in use more suitable for shipping apples than the Canadian apple barrel. A smaller package is only useful where the apples are particularly fancy and extra selected. Inspection of apples has been proposed by our Association and an Act has been passed in favor of the same, but nothing definite has yet come out of it. It is hoped that very soon our government will place this matter upon a working basis, because it would go far toward developing the apple growing interests of the Province of Ontario.

Sulphate of Iron.

668. Sir,—What quantity of sulphate of iron is used to a gallon of water in spraying trees?

Gerald Rehally.

One pound to twenty-five gallons, but only to be applied when the tree is devoid of foliage. Instead of this, however, the copper sulphate solution is recommended for fungus disease, one pound to fifteen gallons of water—see page 160.

The Oblique Banded Leaf Roller.

669. SIR,—What shall I do for a worm that rolls up the leaves of currant and gooseberry bushes, fastening the leaves up with a web. I have noticed it also on the leaves of trees, *e.g.*, the apple and plum. I send you a specimen.

C. P. MORGAN, *Truro, N. S.*

Reply by Prof. James Fletcher, Central Experimental Farm, Ottawa.

The specimens sent by Mr. C. P. Morgan, from Truro, N. S., which he had found so troublesome upon his currant and gooseberry bushes, of which they rolled up the leaves and destroyed the foliage, are the caterpillars of the Oblique banded Leaf Roller (*Cacoecia rosaceana*, Harris). This insect has been rather more abundant and injurious this year than usual. It is sometimes a troublesome pest upon apple trees. This year it has been sent to me as an enemy of the birch, apple, pear, gooseberry and currant (it is always rather abundant upon these), and a rather interesting attack, in which it destroyed the seeds only of the silver maple. In fact this insect seems to be a pest on a very large number of shrubs and trees, upon any one of which it may develop injuriously upon special occasions. The general practice of spraying fruit trees for the codling moth and Leaf Roller, will certainly reduce very largely the occurrence of this pest, and spraying the bushes with Paris green, or any of the well-known insecticides, will keep it in check.

Seedling Currants.

670. SIR,—I will mail you to-day some sample currants—3 seedlings red—one of which is the best in quality I ever saw ; to distinguish it I call it the Foundling. In size it is about as large as the Cherry, but the bush being old and every available branch being layered, it is not as large this season as formerly. It is an upright grower and very heavy bearer. I send with them some others to test them by, as you may not have any on hand. I am rather late in sending them, as currants left long on the bush tastes a little bitter. I may also send a sample of red raspberry if I can find any on the bush ; it is one that I crossed.

F. W. PORTER.

The samples very much resemble the Cherry currant, but are too much bruised to test the quality ; the raspberries are entirely mashed. They need packing with cotton, so that they cannot move about.

To Destroy Borers.

671. SIR,—On page 269 you give Mr. Hillborn's method against the peach borer. Would the same be effective against the currant borer ? If so, how should it be applied Is there any certain method of dealing with this pest except cutting out the wood affected ?

W. H. ROWSON, *Burlington.*

We do not know of any experiments in this direction having yet been made. The application to currants of this mixture with a brush would be too much

labor, and even if a solution for spraying could be prepared, it would be difficult to apply it to the stems in June, on account of the foliage. The currant stems need frequent renewal, anyway, and, when grown in bush form with six or eight stems from the root, it is not wholly an evil that the older stems have to frequently be cut out, for thus new and vigorous ones are encouraged. Probably there is no plan better than the old one, after all, for destroying the currant borer, viz., cutting out and burning all old or stunted stalks, whether plainly affected or not, and thus keeping up an abundance of young and vigorous shoots.

An Old Sod for Fruit.

672. SIR,—I have a piece of land 150x150; it is in grass—has not been worked for years—soil, a stiff clay. Two or three pear trees on it bear well. What fruit I get from it must be gathered by last of second or third week in September. I want to get the land into shape at once, and put in principally pear and plum trees. Would it be too much to ask you for a line saying how I should treat the land, how many and what varieties of fruit I should plant? Would sand mixed with the soil improve it?

J. GREENE, *Hamilton, Ont.*

Such land as this should be well worked up before planting, and, if at all wet, thoroughly drained. If ploughed this fall, and left exposed to the frost of winter, it will no doubt work down into fine tilth next spring, and may possibly be planted with fruit trees: but unless in proper condition then, it would be best to work it up for a year to beans, or by summer fallowing, and then plant it. The application of a thick coating of loam on the surface would very much improve the texture and quality of the soil; and even a few loads of sharp sand ploughed in it would help it much, mechanically. Plums, pears, grapes and gooseberries would thrive well on such soil.

Grape Vine Pruning.

673. SIR,—On page 265, in speaking of the Wilder Grape, you say "it should be trained on the Renewal System," etc. Please tell me where I can get instructions on this system.

C. MORETTI, *Montreal.*

This has been several times described in this journal, and will be given again in pruning season if called for. It provides for two arms, on the lower wire from which upright stems are grown, about twelve inches apart. These are cut back, alternately, every other year to the main arms, and thus the young fruiting vines are always near the root and full of vigor. See "Fuller's Grape Culturist,' or "Bailey's American Grape Training."

THE BRITISH APPLE MARKET.

THE PROSPECT for the sale of Canadian apples in Great Britain this season is unusually bright, according to a cable to the Montreal Star it is said that the prospects for the trade are even better than in the bonanza years of 1891 and 1892. The report further states that there is scarcely any fruit worthy of attention in the British Isles, or on the continent, and that the importations of apples must necessarily be heavy. Here is a circular also just received (August 11th), from Mr. J. B. Thomas, London, which goes to confirm the above statement :—

Having now received reports from all the most important apple-growing districts in this country, as well as from the Continent, I submit a digest of the information therein furnished, which may prove useful to shippers.

In the early spring of this year we had every indication of a very early summer, and all kinds of vegetation looked healthy and promising. Farmers and growers anticipated better results even than last year, which was a phenominal one. But these anticipations were completely frustrated by a sudden fall in the temperature, and slight frosts during the latter part of March and early in May, which destroyed the fruit blossoms and paralysed vegetation, and the hopes of satisfactory, if not abundant crops, were shattered.

United Kingdom.—Reports from the South-eastern counties, whence London supplies are principally derived, show that the apple trees suffered severely from the late frosts. The tale of disaster is uniform from all quarters, and the probable yield of apples varies from one-tenth to one-quarter, as compared with that of last year. The condition of the fruit appears, however, to be generally good, and although the yield is sure to be light, the apples are healthy, large, and likely to ripen well.

From the Western and Midland districts reports are similar. The entire yield will probably not equal one-fifth of last year's crop.

France.—Advices from the North and North-western districts, from whence the largest proportion of exports to this country is made, show an average crop. Early sorts will be abundant, later kinds also promise well ; and as both rain and sunshine are pretty well proportioned up to the time of writing, the quantity and condition will, in all probability, be satisfactory.

Holland and Belgium.—Our reports indicate that the crops will be considerably less than the average, and, while the yield is expected to be scanty, the apples will, so far as present appearances indicate, be gathered in fine condition.

Germany.—Every prospect of a very poor crop—not equalling more than a quarter of the quantity gathered last year. Of late sorts it is stated that if a light crop they are sound and promise to ripen well.

Spain and Portugal.—The yield is an average one and of fair condition, but the bulk of shipments to this country will be over at latest in the month of September.

It is, then, abundantly clear that the great bulk of the crops on this side will be consumed before supplies from your side arrive, and that shippers need not allow any consideration of our crops to limit the extent of their operations. Given a good crop on your side, and gathered in good condition, there is every prospect of a large trade being done with this country during the ensuing season. Shipments to London may commence end of October, and earlier to our northern seaports.

MESSRS. L. W. WILLIAMS & CO., of Liverpool, write :—

From reliable reports we learn the crop in the United Kingdom is extremely light, while Continental advices also show their supplies will barely meet home requirements, fine varieties being scarce, therefore, we anticipate there will be a good demand for large fine fruit, which quality only recommend shipping, and would strongly advise senders to abstain from exporting inferior and small stock, which will not be wanted.

MESSRS. W. W. WHITE & CO., of London, England, write :—

Last year America and Canada had a bad crop, whereas in England we had a very heavy one—the heaviest for twenty years—and very few apples were expected to be wanted

here, our home supply was thought to be sufficient for all requirements; but, contrary to expectation, it was found that shortly after Christmas our stock of apples was exhausted. This year we believe will turn out to be the worst crop we have had for twenty years in England—in many counties only sufficient for local consumption; and in the home counties which supply London during the fall—that is to say, August, September and October—we think this year one month will be sufficient to clear up all their crops.

As regards the Continent—

Holland has only half a crop.

Germany only a quarter crop, and will, we believe, be a larger buyer this year from other countries.

France has a fairly good crop in the south, but, being early fruit, these are likely to be cleared away during the next three months. On the other hand, the great apple-producing country from Nantes to Orleans has a bad crop; and the country adjoining Belgium also is bad. This is most important, it being a district that sends very largely to the English markets.

Belgium, in certain districts, has a fair crop, but they are mostly early fruit—sorts that do not keep much after October—late sorts are a very bad crop.

Italy had a very large crop last year and sent something like 5,000 tons here after Christmas, but this being the non-bearing year she can only have a light crop.

Looking at Europe generally, it is the worst crop of apples for many years, and this should leave a grand opening for all the marketable fruit you have in your country fit to send to England.

Nova Scotia, we hear, has a fairly good crop; and **Canada** is said to have an average crop. On the other hand it is reported that crops in **Virginia** and one or two other States are very scanty. **New York State** is reported to have a good crop, and we look forward to a very large trade with your part during the coming season.

THE BENEFIT OF SPRAYING APPLE ORCHARDS.

READERS of the CANADIAN HORTICULTURIST will have noticed what the Editor says on page 270, August, 1894, of the injury to Mr. Mitchell's apple trees and Ben Davis and Greening apples, caused by the apple scab, *Fusicladium dendriticum*, whose trees had not been sprayed; and will remember the contrast presented by his own orchard where the Bordeaux mixture had been faithfully applied. A letter has recently been received by the writer from J. C. Harris, Esq., Ingersoll, Ont., in which he says, "I sprayed my apple orchard five times this summer, and I have, I think, the finest samples all through I ever saw; think I will have not less than five hundred barrels, all best winter varieties."

Not only does spraying, when properly and persistently done, prevent the fruit from becoming scabby, but also keeps the foliage clean and healthy; and, therefore, other things being right, also keeps the trees healthy, and the fruit better in size and color.

Of this the fruit grower may be assured, that if he neglects to spray his trees properly he will soon find that the fruit is inferior in size, quality, and quantity, and that growing apples for market does not pay.

Toronto, Aug. 6th, 1894. D. W. BEADLE.

THE APPLE CROP IN ONTARIO.

The rumor having been spread by apple buyers that there are a large quantity of apples in the country, and that there will be at least 1,200,000 barrels for export, we deemed it wise to enquire more fully, in order that our growers may be on their guard and not sell their apples below their true value. The highest reliable estimate indicates about 50% of a full crop for Ontario, but in our opinion 25% is more nearly correct. The United States crop will be about 50%, so that, at the best, there is but a half crop in North America, while the European crop is very short indeed. The probability is, therefore, that first grade apples will, this year, rule much higher than usual.

We give extracts from letters from various parts of the province which will interest apple growers :—

Southern Ontario.

MR. W. M. ORR, of Stony Creek, writes :—In my July report of the apple crop I gave you 10 to 15% for fall, and 5 to 10% of a full crop for winter, fruit. I cannot make any better report now. Prospects here not improved, the drought continues, we have had very little rain since middle of June, there will not be a dozen barrels of winter fruit fit for market in some of the orchards in this section. I have not heard of any apple buyers in this section this year. Our apples are usually sold for the English market, but from what I could learn at the Columbian Exposition, from growers and buyers from the Southern and Western States, I believe that before another decade the bulk of our apple crop will be marketed there, as they expressed themselves delighted with the appearance and flavor of our apples.

MR. W. PETTIT, Winona :—It is difficult to arrive at what percentage of a crop there will be in this locality. I think from 15 to 20%. One buyer who had been out for some time said, the crop has been very much over-estimated ; in sections where a fair crop was reported he found very few. I have heard of no price for winter fruit yet.

MR. A. M. SMITH, St. Catharines :—I don't think I have any reason to change my former statement that apples will not be more than 10% of a full crop here, and poor at that.

HON. L. C. CHAPIN, Brantford :—Fall apples in this section 50% of full crop, but dropping continually, premature ripening. Greenings 50, but other winter apples not above 50. Sample will be small and uneven in size. No prices offered as yet.

MR. J. K. MCMICHAEL, Waterford :—In this district there is about 25% of an average crop of apples. The sample is very second class from the severe attack of fungus. Good varieties of fall and winter apples, hand picked, are worth about thirty cents per bushel at our canning factories.

MR. J. C. HARRIS, Ingersoll :—Apples are fully 50% of a full crop, and perhaps more, but a poor sample. Not many worms, but greatly injured by fungus. I understand buyers here are not offering over $1.25 per barrel as yet. The majority of winter apples in this section are marketed in England. Thanks to the HORTICULTURIST and Report of Fruit Growers' Association for bringing before its readers the importance of spraying, I have this year, I think, double the apples I ever had before, and nearly every specimen perfect by spraying with Bordeaux and London purple.

MR. J. L. HILLBORN, Arkona :—I have been driving for some time buying apples. I find the crop about as follows : Fall apples, 30% ; winters, 75%. Quality fair to good, except Spys, which are small, and quite spotted where not sprayed. Where the spraying was at all well done I see much benefit from its use.

MR. W. W. HILLBORN, Leamington :—The apple crop is better than it has been during the last three years. It cannot, however, be considered much, if any, more than half of what was considered an average crop a few years ago. The leaf blight and spot is very bad on most orchards. The weather has been so dry here that only those orchards that have been well cultivated are producing good apples. The price offered here is 75 cts. per barrel for fall varieties and $1 for winter.

W. GAY, Elora :—In answer to yours I would say that the percentage will be, in fall apples, and pears and plums about 50% ; winter apples not more than 40%, owing to neglect in spraying and the very dry weather. There has not been any buyers as yet looking for fruit. Astrachans are a drug—the fruit all falling off. Duchess, small and much scabbed. The winter apples from this section go chiefly to the English markets.

MR. W. J. CLINTON, Windsor :—The South Riding of Essex expect about 50% of a full crop, while the crop in the North Riding will not exceed 40%. If we do not get rain soon the prospects are that it will be still less. Our apple growers are waking up to the fact that it is necessary to spray the trees and work the ground in our orchards to get a profitable crop. Fall apples are worth 40 cts. per bushel, and are sold principally in Windsor and in the towns and villages of the County.

Middle and Northern Ontario.

MR. A. McD. ALLAN, Goderich :—Apples still falling badly, and even leaves turning yollow and falling with the dry weather. Apple crop fit for market in this district only 5%. Best fruit on heavy lands average for the Province 25%. Buyers offering $1 only, but proper value is high. British market unusually good and prices on upward grade. I look for highest prices ever obtained for finest quality.

MR. JAS. LOCKIE, Waterloo :—I may say that there will be no apples in this district to spare for shipment. Winter apples are not plentiful ; there are fall apples enough for home consumption and probably some more. Snow apples are plentiful ; some Golden Russets, and a few of other varieties. But this will not be enough to make it worth while for any one to make any shipments from here.

MR. SIMON ROY, Berlin :—The apple crop throughout this (Waterloo) County will average about one-half of the season of '93, and that half mostly of fall and early winter varieties. The Golden Russet appears to hold its own, and probably a limited supply of this variety may be obtained for export. Spies, Baldwins, R. I. Greenings and Blenheim Oranges—our most valuable varieties—are rarely seen on the trees. A good demand exists for the early apples for the purpose of drying—as was proved by the provident portion of the community.

MR. J. CUPPAGE, Orillia :—On the whole I should call crop 50 per cent., but most fall and winter sorts are badly spotted, and the severe drought prevents swelling of the fruit.

MR. THOMAS PLUNKETT, Meaford :—In reference to the apple crop in the Township of St. Vincent, on the Georgian Bay. I have interviewed three dealers who have been over the whole ground, with a view of purchasing the stock. One says : There is a fine crop in St. Vincent except in one or two places. Another says, full crop in some places, but won't average over 60 or 70 per cent. Another says, about 60 per cent., and if we don't soon get rain it will be much less. It is considered by all dealers the crop won't come up to an average crop. The long-continued dry weather is telling seriously on the uncultivated orchards. The great difference in the reports of the dealers is owing to the time the examination was made ; the first report was early in the season. I don't think we will average over 60 or 70 per cent. now.

MR. CHAS. DRURY, Crownhill :—Early apples in this country are, as a rule, an average crop. Winter and other varieties will not be more than 60% of a full crop.

MR. E. B. EDWARDS, Peterboro' :—The apple crop in this neighborhood promised to be a large one, but there was a large falling off earlier in the season, and the present dry weather has prevented the growth. There will be probably about half, and in some cases two-thirds, of a crop. There are, however, not many apples grown for export—a few carloads at the most.

MR. B. GOTT, Arkona :—Pears very abundant, and samples good, clean and nice especially where they have been treated with fungicides. The price is low. We want better distribution to more remote markets. Regarding apples, I am sorry to say that I cannot speak with precision of any very great extent of this country ; but as far as my information goes, the crop is a very good one indeed ; and even in this section, abundant. There is quite a variation, however, in the crops, arising from the soil and the orchardist. On the sandy soil of Caradock, for example, the fruit is not as good or as plentiful as on the better soil of Adelaide ; neither is the fruit withstanding the drought as well, or ripening as well. But the greatest injury to the crop of all, is negligence from the orchardist. Poor, neglected, slovenly orchards, and we have a great majority of them, are almost in every case a despicable spectacle, and will be a losing game to their owners. But where proper pruning, and spraying, and culture, have been timely attended to, the orchards look well, the fruit is clean and beautiful, and very plentiful, and maturing nicely. and will be a source of great profit to the owners. The apple crop here, under our present conditions, will average this season, upon an approximate estimate, will run some 50 to 75 per cent. of a full crop over this west of Ontario. The price the growers are now offered for them are 75c. per barrel for fall fruit, and $1 per barrel for the winter fruit, the buyer finding the packing and doing the labor. Already the summer apples, and some of the fall apples are packed and away, and the buyers are now busy going round to look up the winter frult, and to secure them if possible.

MR. J. D. STEWART, Russeldale :—Summer and early fall apples, mostly small and of inferior quality, being principally used for stock and home consumption. Should the drouth continue much longer, winter sorts will barely yield enough for family wants on farms whose orchards enabled the owners to dispose of considerable quantities in former years. Mr. Ryan, of Mitchell, has bought the bulk of our apples the past two seasons for shipment to the old country. No offers so far for what may be placed on the market.

MR. C. W. HARTMAN, Clarksburg :—The apple crop is reported to be a good average crop. Size of fruit somewhat smaller, owing to dry weather. Fall apples are more or less marked with scab. Rogers for English market are paying as much as $2.00 per bbl., but the price is not yet definitely fixed.

MR. J. A. MORTON, Wingham :—The apple crop is very badly spotted in sections, and will not be over ⅓ crop, probably not much over ¼ of salable fruit for shipping. Buyers are offering $1 per bbl. at the orchard for winter fruit. Spys and Kings are badly spotted, Baldwin less so. The principal market for apples in this section is the British. Duchess is a good crop.

MR. G. C. CASTON, Craighurst :—In reply to your enquiry on fruit crop, would say that early apples are abundant and cheap. Fall apples will be a fair crop, but the quality will be below average. Early apples, Duchess and Astrachan, have been selling from $1 or down to 50c. per bbl. Some have been shipped to Manitoba, and some to the Algoma District. Winter apples will not be more than 50% of a full crop, and I think even that is too high an estimate. Pears are not grown here extensively enough to be worth while estimating quantity, or quoting prices. What few are grown are consumed locally.

MRS. CHAS. TOD, Bowmanville :—The apple crop, the Early Harvest, Red Astrachan, and Duchess about ⅔ crop. Price paid about 75c. per bbl. for the fruit in the orchard. Later fall fruit about ½ crop. Winter fruit not more than half crop, or about the same as last season, which was considered a very light crop.

MR. W. BOULTER, Prince Edward Co. :—In my district, which will be a fair guide, apples, summer and fall, is good, fully 75 per cent. Winter varieties are poor, will not be over ½ crop. Quality is good, but suffering at present from severe drouth. Prices, summer fruit, $1 per bbl. ; seller furnishing bbl., 25c. Winter fruit, on account of conflicting ideas as to English demand, prices are unsteady, few of any sales are yet made ; possibly will range from $1.00 to $1.50 per bbl. Pears generally good. Plums very few. No peaches or grapes in locality.

MR. THOMAS BEALL, Lindsay :—Summer apples, above average ; autumn, average ; winter, one-half of average. This applies to this immediate locality. Both the apple and the pear crop will be much below the average in this district this season, caused by the unprecedented rainfall which set in on the 18th of May. All fruit trees were in prime con-

dition in the spring, having passed the winter without injury. About the 12th of May the orchards here were unusually full of bloom and presented a most beautiful appearance, which of course gave promise of a large yield of fruit. But many varieties of both apple and pear blossoms were insufficiently fertilized when the rain set in on the 18th and which continued almost without intermission until the 3rd of June. As a consequence the later blooming varieties of both apple and pear trees are bearing but little or no fruit.

MR. JOHN H. CROIL, Aultsville :—Will have an average crop of both early fall and early winter apples in this district, and the quality of both kinds promises to be of a good quality, average size and fairly free from spot. The early fall varieties, Duchess, St. Lawrence, etc., are usually sold in our local markets in Ottawa and in Montreal at from $1.00 to $1.25 per bbl. on cars, nearest railway station ; and the early winter varieties, Fameuse, McIntosh Red, etc., bring about 25 cents per bbl. more in the same markets. There are very few late winter apples raised that are suitable for export.

MR. W. S. TURNER, Cornwall :—After making diligent inquiries, I must still put ours at 100, and very good fruit at that. Very little scab, though the tent caterpillar is very numerous, but that will not affect our crop much. Fall apples almost a drug. No prices yet for winter fruit. I do not think there is enough grown here to affect the market much. We ship to Montreal usually.

⁂ Open Letters. ⁂

The English Gooseberries.

SIR,—I may say I do not look to the pure English varieties for our future gooseberries, but to a cross with Pearl class again on English. Pearl, on account of its wonderful vigor, would be the line I should pursue.

Spraping no doubt has settled the mildew problem, but so far as my experience goes, there is a worse impediment in the way of the general culture of the English varieties, that is, their want of vigor.

You will admit that for general culture we need large crops of large fruit, and the English, so far as I have seen, don't grow wood enough to make large crops possible.

STANLEY SPILLETT, *Nantye.*

REPORT CALLED FOR OF PLANT DISTRIBUTION.

In order that the Association may receive some benefit from the labor and expense of sending out plants and trees during the years that have passed, we have decided to ask for a tabulated report from all our readers of those plants which have been tried by them. The page having the form on it may be cut out, and filled up as fully as possible, and addressed—To the Secretary of the Fruit Growers' Association of Ontario, Grimsby. From these a report will be prepared to be presented at the Annual Meeting in Orillia, next December.

Abbreviations to be used in filling in the accompanying blank forms.

APPLES.

Size.	*Form.*	*Color.*	*Quality.*	*Use.*	*Season.*
l. large. m. medium. s. small.	r. c. roundish conical. r. ob. roundish oblate. r. roundish.	y. r. yellow and red. r. s. red striped. g. y. greenish yellow. rus. russeted. y. rus. yellow & russet.	g. good. v.g. very good. b. best.	f. family. k. m. kitchen and market. f. m. family and market.	give months of use.

BLACKBERRIES AND RASPBERRIES.

Size.	*Form.*	*Color.*	*Qnality.*	*Season.*
l. large. m. medium. s. small.	ob. c. oblong conic. r. c. roundish conical. ob. ov. oblong oval. c. conical. o. obtuse. r. roundish.	b. black. p. purplish. r. reddish. y. yellow.	g. good. v.g. very good. b. best.	m. medium. e. early. l. late.

CURRANTS.

Size.	*Form* of bunch.	*Color.*	*Quality.*	*Use.*	*Season.*
l. large. m. medium. s. small.	l. long. v. l. very long. s. short. m. medium.	r. red. b. black. w. white.	a. acid. m. a. moderately acid. v. a. very acid.	k. m. kitchen and market. f. m. family and market. m. market.	e. early. m. medium. l. late.

GOOSEBERRIES.

Size.	*Form.*	*Color.*	*Quality.*	*Use.*	*Season.*
l. large. m. medium. s. small.	r. round. o. oval. r. o. roundish oval.	r. reddish when fully ripe. g. greenish yellow when fully ripe.	g. good. v.g. very good. b. best.	k. kitchen. m. market.	e. early. m. medium. m. l. medium-late.

CHERRIES.

Size.	*Form.*	*Color.*	*Use.*	*Season.*
l. large. m. medium. s. small.	ob. h. obtuse heart shape. r. ob. h. roundish obtuse heart shape. r. h. roundish heart shape. r. roundish or round.	l. r. lively bright red. d. r. dark red, almost black. a. m. amber mottled with red. y. r. yellow ground, shaded and marbled with red.	f. family, for dessert. f. m. family or market. k. m. cooking or market. m. market.	e. early. m. medium. l. late.

GRAPES.

Size of berry.	*Form* of bunch & berry.	*Color.*	*Quality.*	*Use.*	*Season.*
l. large. m. medium. s. small.	s. r. short bunch, round berry. l. r. large and round. m. r. o. medium bunch, roundish-oval berry. m. r. medium bunch, round berry.	b. black. r. reddish or coppery-brownish red. g. greenish-white or yellowish.	g. good. v.g. very good. b. best.	t. table. m. market. w. wine.	e. early. m. medium. l. late.

QUINCES.

Size.	*Form.*	*Color.*	*Quality.*	*Use.*	*Season.*
l. large.	o. oblate.	g. greenish.	h. half tender.	k. kitchen.	e. early.
m. medium.	ob. obtuse.	y. yellowish.	t. tender.	m. market.	l. late.
s. small.	p. pyriform.				
v. very.	r. roundish.				

PEARS.

Size.	*Form.*	*Color.*	*Quality.*	*Use.*	*Season.*
l. large.	p. pyriform.	y. g. yellow or yellowish green with a red or russet red cheek.	g. good.	f. valuable family dessert.	s. summer.
m. medium.	r. o. p. roundish obtuse pyriform.		v.g. very good.	k. m. kitchen and market.	l. s. late summer.
s. small.	r. a. p. roundish acute pyriform.	y. r. yellow and russet.	b. best.	f. m. family and market.	a. autumn.
	ob. p. obtuse pyriform.	y. when mostly yellow or yellowish.			e. a. early autumn.
	ob. o. p. oblong obtuse pyriform.				w. winter.
	r. roundish.				
	r. ob. roundish obtuse.				

PLUMS.

Size.	*Form.*	*Color.*	*Quality.*	*Use.*	*Season.*
l. large.	o. oval.	g. greenish.	g. good.	f. family.	e. early.
m. medium.	ob. obovate.	p. purplish.	v.g. very good.	m. market.	l. late.
s. small.	r. roundish.	r. reddish.	b. best.		m. medium.
		y. yellow.			

STRAWBERRIES.

Size.	*Sex.*	*Color.*	*Form.*	*Flesh.*	*Season.*
l. large.	b. bisexual.	d. c. deep crimson.	r. c. roundish conical.	s. soft.	e. early.
m. medium.	p. pistillate.	d. s. deep scarlet.	o. c. obtuse conical.	f. firm.	m. medium.
s. small.	n. p. nearly pistillate.	b. s. bright scarlet.	c. conical.	m. medium.	l. late.
		w. t. whitish, tinted with red.	r. roundish.		e. l. early to late.
		l. c. light crimson.	r. o. c. roundish obtuse conical.		

VARIETY.	Year.	Size.	Form.	Color.	Quality.	Use.	Season.	Value—Scale 1-10.		
								Southern Ontario South of North Latitude 43½°.	Central Ontario from 43½°-44½°.	Northern Ontario North of North Latitude 44½°.
Swazie Pomme Grise Apple	1875									
Glass Seedling Plum	1876									
Goodale Pear	1877									
Burnet Grape	1878									
Ontario Apple	1879									
Saunders' New Hybrid Raspberry	1880									
Senasqua Grape	1881									
Wealthy Apple	1881									
Lee's Prolific Black Currant	1882									
Moore's Early Grape	1882									
Worden Grape	1883									
Niagara Raspberry	1883									
Canada Baldwin Apple	1884									
Prentiss Grape	1884									
Russian Apple	1885									
Fay's Prolific Currant	1885									
Ontario Strawberry	1886									
Russian Yellow Transparent	1886									
Lucretia Dewberry	1886									
Early Victor Grape	1886									
Marlboro Raspberry	1886									
Vladimir Cherry	1887									
Hillborn Raspberry	1887									
Niagara Grape	87, 88, 89									
Golden Queen Raspberry	1888									
Jessie Strawberry	88 & 89									
Doyenne Boussock Pear	1888									
Ostheim Cherry	1888									
Vergennes Grape	1889									
Princess Louise Apple	1889									
Russian Apricot	1890									
Simon's Plum	1890									
Shaffer Raspberry	1890									
Wealthy Apple	1890									
Bubach No. 5 Strawberry	1890									
Golden White Apple	1891									
Mills Grape	1891									
Williams Strawberry	1891									
Triomphe de Vienne Pear	1891									
Moore's Diamond Grape	1892									
Idaho Pear	1892									
Gipsy Girl Apple	1892									
Round Borsdorfer Apple	1892									
Blushed Calville Apple	1892									
Silker Leaf Apple	1892									
Little Hat Apple	1892									
Seedling Black Currant	1893									
Red Queen Apple	1893									
Golden Reinette Apple	1893									
Crimean Apple	1893									

SOUVENIR DU CONGRES.

One of the very best new varieties of summer pears ; very productive.

THE

Canadian Horticulturist

Vol XVII. 1894. No. 10.

'TIS a banner of gold and scarlet
October flings to the breeze,
And none other of all the twelve months
Can boast such colors as these.

For the trees that through all the summer
Have been dressed in the darkest green,
Now hanging with red and yellow
In most gorgeous gowns are seen.

The golden-rod flames by the roadside
And over the fences old,
Till each meadow is fast becoming
The Field of the Cloth of Gold.

And even the sun in his setting,
When he slowly sinks from view
And looks over the world of color,
Has caught the golden hue.

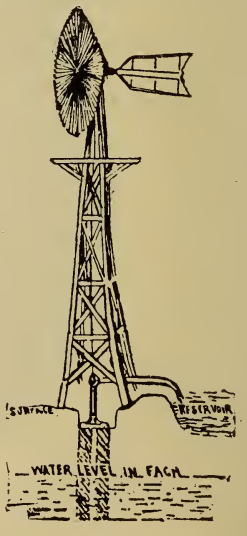
A. S., in Ex.

SOUVENIR DU CONGRES PEAR.

MAGNIFICENT specimens of this noble French pear have been shown of late years at the Industrial Fair in Toronto. For beauty of appearance and size, it surpasses every other pear of its season, but, unfortunately, it is not of the best quality. It ripens just before the Bartlett, so that it is difficult to keep it in good condition until the time for judging the fruit. At the time of writing (Sept. 8th) the fruit is rapidly falling to the ground.

The pear originated in France, and was dedicated to the Pomological Congress of France, whence its name. The tree is a vigorous grower, productive, and naturally takes a pyramidal form. It is thus described by P. Barry, in his "Fruit Garden." Fruit large to very large, resembling the Bartlett; usually growing in clusters; bright yellow, where fully matured, with the parts exposed to the sun brilliant red, or carmine; flesh like Bartlett, but much less musky. Commences to ripen in August a little before Bartlett, and extends into September; growth moderate.

A Cheaply Constructed Reservoir for watering garden produce by irrigation is owned by John Simon, of Finney Co., Kan. He says in Garden and Lawn: "I use a Gause pump that draws a 5 in. stream 15 ft. high, and fills a 75x80 ft. reservoir 3 ft. deep in 24 hours. The mill is a 10 ft. Halliday. The number of times of irrigation depends on the dryness of the climate and the season. I water orchards and garden truck every week or two. Trees and vegetables do not require as much water as alfalfa or general farm products. In the orchard he uses a ditch between the tree rows as well as between the rows of garden stuff. He finds a little water goes farther than where the soil requires flooding. If farmers knew the advantage to be gained by the use of a little water at the proper time during the dry spells of almost every year in almost any district of the entire country, says Mr. Simon, they would put in a pumping plant, using wind power where water is not to be raised over 25 to 40 ft., and each foot under this distance the better.



THE ELBERTA PEACH.

OUR comments in September number on the Elberta peach very much interested me, as I had just finished peeling a bushel or more of that peach for my wife to put in cans. I have fruited this peach for three years. Got the trees from Georgia, five or six years ago. The trees seem to be as hardy as our most hardy trees; bear full when other trees bear. With me the trees are not as large as other trees of the same age; late Crawford trees nearly one-third larger. My location not a good one for Crawfords. The Elberta trees yield with me five bushels to the Crawford's one. The Elberta, where the late Crawford does not do well, will prove a great acquisition. While the peach seems to be everything desired in a late peach, the tendency to rot when ripening is greater than in other peaches. The rot does not extend through the whole peach, but will be on one side, often only a small spot, the rest of the peach sound and good. These spots may be caused by being stung by some insect. There are so many good peaches on the trees, that one will hardly notice the few that show decay. I conclude by saying that the tree is hardy, a great bearer, and the peach in size, color, attractiveness and quality, all that can be desired.

S. S. Bailey.

THE APPLE CROP.

In Ontario.—After an extended tour of the Province, the writer can make little change in his report of the condition of the apple crop in Ontario. All through the South, from Niagara to Windsor, the same doleful tale of failure is repeated, and confirmed by a view of the trees. The same is true along the northern shore of Lake Ontario, until you near Trenton, where some orchards are pretty well loaded. So also, as we proceed northward from Toronto, there are scarcely any apples till you come to the south shore of the Georgian Bay, where we found some orchards quite heavily loaded with fruit. Some growers there are on the safe side in their estimate of 60 per cent. of a full crop.

In Nova Scotia.—Mr. John Craig sends us the following interesting note concerning the condition of the apple harvest in Nova Scotia. In a letter from S C. Parker, of Berwick, N. S., he says: "With the great show of blossom it was thought that the fruit crop was setting very lightly, but since that time it has steadily improved till to-day in King's County, I am convinced there are more apples than ever grew here in one year before. Gravensteins are a full crop; Kings 110, Baldwin 110, and the winter apple a full crop. Plums are wonderfully prolific. A gentleman in Wolfville is harvesting at least 400 bushels, while a near neighbor of ours has picked 150 bushels from an orchard seven years out. Cranberries are also a splendid crop. Mr. Parker further states that the dry weather, however, has had the effect of decreasing the size of the fruit and hastening its maturity."

PEACHES TO PLANT.

IN planting a commercial orchard great care should be taken in selecting the varieties. If a mistake be made here all the other work goes for nothing. Some varieties of peaches are local and do well only on certain soils and in certain localities. It is always better to observe how certain varieties do in your locality. I shall briefly state how some of the leading varieties have done with us during the last few years. Of a great many varieties that we have planted successfully and have fruited, we have found the following to give the best results:—Troth, Early York, Mamie Ross, Thurber, Captain Ede, Elberta and Ward's Late. The Thurber is a peach comparatively little known. It is one of those comparatively new sorts that were thought a great deal of when they first came out, but were soon forgotten in the headlong rush for newer and more highly advertised sorts. It is a white peach with a faint red cheek, very firm, productive, remarkable for its hardiness in both bud and blossom. We had fair crops of Thurber when no other variety in the orchard bore a peach. Its quality, however, is not first-class, and that is probably the only objection.

The Thurber gets ripe from ten days to two weeks earlier than the old Mixon freestone. It is a good shipper and profitable. The Captain Ede is a peach originated by the man whose name it bears. It is a golden yellow freestone, finest quality, ripens same time as Thurber. It is hardy and a splendid bearer. Elberta is another good peach, ripening about with the Thurber and Captain Ede It is yellow with a fine red cheek, a beauty, good quality and productive. It contains about all the good points one could desire in a peach. Old Mixon does not do very well with us, but about forty miles north of where I live it does very well indeed. Ward's late is the Thurber over again, only of a little better quality, ripens about one month later than the Thurber. For a medium early peach we have found nothing that excels the old-fashioned Troth and Early York. Mamie Ross is a large, white peach, with a red cheek and freestone, fine seedling of the Chinese Cling and Early Rivers, that ripens about ten days later than the Early York. It has proved to be quite a good peach. It is the best of its season I have ever found. It is extra large, hardy productive and profitable. A few years ago we planted an experimental orchard containing thirty or forty new varieties.—WILLIAM GOULD, to Illinois Hort. Society.

NOTE BY EDITOR.—In Canada we need a good peach to come between the Hales and the Early Crawford, and some say the Yellow St. John is the peach to bridge over this gap. The Early York we discarded some years ago. It was not large enough. Lord Palmerston is a fine peach, white-fleshed, ripening September 7th, as the Early Crawford is just over. It is almost equal to Old Mixon in quality, and is a firmer peach. Bowslaugh's Late is one of our best late peaches.

FRUIT PACKING AND GRADING.

RUIT and garden producers are much in need of a general system for grading. We must have legislation and co operation as well as the enforcement of such laws enacted by our legislature. To-day, we have men authorized to inspect flour, coal, oil, whiskies, etc., placing their official mark on each article inspected. These are bought and sold by the grade as marked upon each case. Fruit is used extensively every day in every State of our Union, and yet no system of grading or inspection is in force.

Grading fruit is not simply separating the better from the inferior; there is another grading which is pre-eminent, uniform measure. Our old standard measures of a half bushel and peck have become so old-fashioned they are a mere figure-head with many fruit dealers. The per cent. of fruit and vegetables thus measured is exceedingly small. Barrels, crates, baskets, berry boxes, etc., are now used to carry fruit and ship to distant markets. No fault is to be found with the box, barrel, or crate, but in the matter of sizes specified regulations should be adopted. I have found baskets holding 5-8, 1-2 and 7-16 bush. Each of these sizes is a basket of the original intention. Probably no wrong was intended, but the matter of sizes has opened the doors wide for the perpetration of fraud. The inexperienced, thinking a basket means a half bushel, offer their produce at so much per basket. The buyer brings out his 5-8 bushel basket and wants it filled round full. The farmer figures 20 bushels will fill 40 half bushel baskets, but when he counts the baskets only 32 are found. A dispute at once arises, but being sold and bought by the basket, the producer takes his pay and departs. The dealer fills his 7-16 bushel or 14 quart basket and then has 45 5-3 baskets. The dealer paid for 32 but now sells 45 5-7, gaining 13 5-7 baskets on the 20 bushel. Frequently such dealers are the loudest complainers.

We need wise legislation and the co-operation of good, honest merchants, backed by every horticultural association in the country, against tricksters of this kind. Barrels, crates, baskets, boxes, etc., should be of established sizes and so easily distinguishable that every buyer and seller knows what he buys and sells. The size of pint and quart berry boxes sometimes returned in crates is often surprising. Every manufacturer has his own notion about the size, or else in his calculation must figure on liquid measure. Crates have never been returned to me with boxes of different makes of the same size.

Careful picking, careful handling, scrupulously clean baskets and boxes, free from last year's mold and stains, add largely to quick sales and better prices. Often one poor over-ripe berry prevents the sale of the box, one inferior peach lessens the value of the whole basket; one bruised, brown

spotted pear rots the whole basket, as there is no established schedule, I present my idea through observation at home and abroad. Fruit grading should be either for the home market or those most distant. First-class fruit should be the largest, most highly colored and most perfectly matured growth. Second-class, fair size, with only such slight defects as debar from the first-class. Third-class, wormy, scabby, irregular. Culls, such as will not pass as third-class and rather better than need be for cider vinegar. One schedule will not do for all fruits. As the fruit differs, so will its schedule.

To have a first-class pear we must try and grow it, have it well developed, gather it at the proper time and be well colored in ripening. Study the market, using judgment in the assorting for shipment or the home market. The fruit packed in a crate should be alike in time of ripening. Never pack pears too highly ripened or the whole box may be lost. Always sell the highly ripened pears at home. Have first, second and third class, grade them carefully and wrap in thin paper to prevent chafing. Never use boxes too large ; a half bushel is large enough. The sides of the box should be planed to prevent discoloring of the fruit, then if properly handled the fruit will open beautifully and you will stand a good chance of receiving remunerative prices. Never ship wormy or scabby pears ; sell them at home. Neither ship with broken stems.

Peaches should be graded when the season permits. Varieties differ in size so the number of peaches depends on the size to fill a half-bushel basket. When they run very large, I grade them 60 to 70, 70 to 80, 80 to 90 or 100, 100 to 150 peaches to the half bushel. Always have the fruit uniform from top to bottom ; never put bitter, insipid, imperfect fruit at the bottom and top off with a few good peaches and a sprig of leaves—your brand will soon be known in the market. Apples are mostly sold by the barrel having a layer at top and bottom with culls and wormy fruit between. Such apples are of but little use on the English market, for there the fruit must be uniform and well colored. It is said that three wormy apples would condemn the whole barrel. Good apples always command a fair price either at home or abroad. The Continent and English market prefers red apples. In America, red, green or yellow are desirable in localities, and every grower must study the wants of his market as only those who make apple culture a study and a business can know how much they will feel the tender touch of man's kind and proper treatment. Whether we shall have poor, scrubby, wormy, or fine, well-grown, richly colored, delicious fruit, such as the ancients would have offered to their gods, is now a matter of choice with each fruit grower.

Graded fruit or vegetables are noticed by prince and peasant, and if the peasant knows how to grade, the prince is ready to buy simply because it appears nice and catches the eye. In many instances it may not be the quality as much as the care in preparing for market. Citrus fruits represent a class of which there is no better graded in the world. Especially is this true of Florida and California oranges. The fine grading of this class of fruit

was brought about a dozen years ago by a packing house on the St. John river, Fla. As they were constantly buying, they were able to grade and wrap the fruit. This soon became an established business throughout the States. Since orange shipping from Florida to Savannah first took place, the grading of the orange has taught shippers all over the country a lesson, until California ships its fine plums, apricots, peaches, pears and other fruits, so that now it is almost as common on the stands of fruit vendors as our own.—W. B. R. JOHNSON before Pa. Hort. Society, Jan. 1894.

TO ASSORT POTATOES RAPIDLY.

Sorting potatoes by hand is very tedious. With the illustration given below the smaller potatoes are easily and quickly separated from the larger ones suitable for market. It is a very simple and cheap apparatus that can be made by anyone. It consists of a slatted trough 5 or 6 feet long, provided with legs or standards of proper length to keep it so inclined that when potatoes are shoveled upon it they will roll down. The slats may be of inch stuff attached to the two bottom cleats, their centres 1½ in. apart, a little closer at the top and a trifle further separated at the bottom, so that the potatoes may not become wedged in the spaces. A suitable width for the sorter is 20 in., with sideboards 8 in. high. When unloading potatoes from the waggon, place the sorter at the side or rear and shovel them directly upon it. Those of suitable size will run into the basket, while the smaller ones, with the earth, little stones, etc., will fall upon the ground or into any receptacle placed to receive them.—Farm and Home.

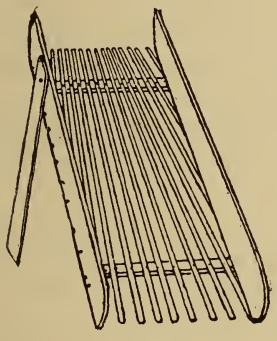


FIG. 696.

THE growing of garden plants for sale is often as profitable work as that of producing the vegetables themselves for market. A great many farmers and gardeners, in every community, would rather buy them than go to the trouble of preparing hot-beds for the small amounts that they require. A person intending to engage in this work should begin their preparations in the autumn, and that is why we mention it now. Hot-beds for all kinds of garden plants should be made ready in the fall, the soil put under cover so it will not freeze, and arrangements made to save the manure that will be needed, in such shape that it will not heat before being put to use.—Rural Canadian.

SOME FRUIT NOTES FROM SIMCOE COUNTY.

HE season of 1894 will not be remembered by fruit growers as one of the most profitable in their experience. Strawberries here promised well in spring, but owing to cold rains and occasional frosts during blossoming time, the crop did not fulfil early expectations. One noticeable feature about them this year was that owing probably to the heat and wet at picking time, they did not keep or carry well. They would not keep twenty-four hours after picking, and any that were shipped a considerable distance arrived in bad shape and could only be sold at a loss.

I still cling to Crescent and Wilson for market berries. Haverland and Bubach do well here, also the Williams, but none excel the two old varieties for main crop. Haverland is too soft, it is no use for shipping, although it bears well and does better in a dry season than many others. Bubach No. 2 is a poor grower, does not make plants enough ; stems very short and fruit gets badly sanded in showery weather. I have not had enough experience with Williams to know how it will do here, but am favorably impressed with it.

If we could get another berry like the Wilson, with all its good qualities as to firmness, hardiness, etc , and a little larger and a little earlier, such a berry would be a great acquisition.

I can say nothing as yet of the forty varieties planted last spring, on the Experimental grounds ; it will be a year before I can report anything definite as to their merits or demerits. But so far as I have been able to judge, I think the Woolverton is one of the best of the new varieties

Raspberries were a fair crop and sold at a fair price. I am getting more in favor of raspberries, in preference to strawberries ; there is not half the labor involved in growing them, a plantation if well cared for lasts a long time and produces well with less fertilizing than strawberries. The Cuthbert is my favorite and it does well here.

Early apples were a good crop and very cheap, in fact a great many have gone to waste or have been fed to stock. It is a pity to see such fine Duchess apples as are grown in this section wasted. They grow to great perfection here, but transportation charges are so high, there is little or no profit in shipping them, if you pay anything like a decent price for the apples. What we want is an evaporating and canning establishment to work off the surplus and turn it into money in that way. I doubt if the canning factories put up anything nicer or more delicious than canned Duchess, if the apples are picked at the right stage. Winter apples are not more than 50 % of a full crop, and such varieties as are subject to fungus are so badly affected, that only a small percentage will be fit for market.

The fungus is worse this year than ever before ; it has affected not only the fruit, but the leaves, and that to such an extent as to considerably check the growth of the trees.

There was an abundance of bloom in spring, and it is a mixed question whether the wet cold weather that prevailed at the time, preventing the proper fertilization of the blossoms, caused the fruit to drop after setting, or whether the fungus was the whole cause of the trouble. However that may be, we see very fully in a season like this, the value of a healthy, hardy variety. Take for instance the Duchess : the fruit was never more handsome than this year, not a sign of spot or blemish either on fruit or leaves, because it has the ability to resist the fungus, and is not in the least susceptible to it. And if we could get a winter apple like the Duchess, with all its good qualities as to hardiness, productiveness and grand cooking qualities, it would be a most valuable acquisition.

If among the eighty-five varieties of Russian apples planted here last spring, we can get one such apple, it will be worth alone all the trouble and expense of this experimental work. But in the meantime, as many of our old and valuable varieties are affected and spoiled by the fungus, the lesson to be learned and impressed upon us, by this season, is that we must spray our trees. As someone has remarked, it seems that this spraying business has come to stay, and those who wish to have good clean fruit and healthy foliage, must practise it diligently.

And just here I feel tempted to parody an old hymn that we used to sing in our young and innocent days long ago :—

Spraying the trees by the daylight fair,
Spraying the trees in the noontide glare,
Spraying the trees in the waning light,
Dreaming it o'er in the solemn night.
Oh, what will the harvest be-e-e-e,
Oh, what will the apple crop be?
Sprayed with "Bordeaux" mixed with bluestone and lime,
Sprayed with a force-pump in early spring-time,
And several times through the summer, you see,
Then sure, oh, sure, will the apple crop be.

Craighurst Experimental Station. G. C. CASTON.

CUCUMBERS, which have been taken from brine, will be harder, greener and more plump if washed in boiling instead of cold water.

WELL matured, sound and ripe pumpkins and squashes can be kept fresh throughout the winter if properly cared for. Put them in a room where they will be free from frost and dampness. Have them perfectly dry, and do not pile them on the top of one another.

SPRAYING EXPERIMENTS.

R. JOHN CRAIG, Horticulturist, Central Experimental Farm, Ottawa, called at this office on the 3rd of September. The object of his visit to this locality was to study the progress of the careful experiments being carried on under his direction by the fruit growers of this district for the destruction of fungous diseases of the apple, pear, plum and cherry. These experiments, it will be remembered, were authorized by the Minister of Agriculture for the Dominion, in response to a request made by the Fruit Growers' Association of Ontario.

He reported to us some interesting particulars concerning the work, as follows :—

"At St. Catharines, he said, the experiments mainly comprised the treatment of fungous diseases affecting peaches, cherries and plums. In regard to peaches the rot, which was the disease the treatment was designed to prevent, was not present this year to any appreciable extent, and so the results of the experiments were not striking. On Early Rivers, the committee in charge of the work reported a gain of two to three per cent. in favor of the sprayed trees. Mr. Broderick also noticed the fact, that the fruit of the treated trees was more highly colored than that of the untreated trees. Mountain Rose and Crawford are now being picked and the results will be carefully noted.

In regard to cherries, some very striking results were obtained in the treatment of the rot on the Black Tartarian. Roughly speaking, the sprayed trees gave three times as much sound fruit as the unsprayed trees. Mr. M. Burrill also reports good results in preventing the rot and curculio on Morello cherries, including Montmorency and Early Richmond.

In the matter of plums, the difference between the treated and untreated trees was most strikingly demonstrated in the much healthier foliage of those which had been sprayed. In the orchard of Mr. Broderick, where the shot-hole fungus has been quite abundant, the treated trees showed a marked improvement both in foliage and character of fruit. The question of improvement in quality of fruit was demonstrated by selecting one hundred average plums of the sprayed and unsprayed trees and weighing each separately. Those from the sprayed trees weighed 3 lbs. 9 oz, while the same number from the trees which had not been treated weighed 2 lbs 1 oz. The color and general appearance of the sprayed fruit was very much better than that which had not been treated.

With regard to the experiments conducted by A. H. Pettit and E. J. Woolverton, at Grimsby, touching the prevention of the apple scab, the results here are most striking, and it will well repay any grower who can

make it convenient to visit the orchards in question and see with his own eyes and be convinced of the benefit to be derived from the application of the remedies recommended. The fruit has not yet been gathered, but it is easy to see the increased quantity, as well as the improved quality, of the fruit of the sprayed trees as against the trees of the same variety, under exactly the same conditions, standing alongside, which have not been sprayed. In preventing the rot of the cherry, the results obtained by Mr. E. J. Woolverton are even more striking than those of Mr. Broderick, which were all that could be expected.

Mr. M. Pettit, in treating the Beurre Giffard and Flemish Beauty pears, reports marked success both in quality and quantity of fruit."

Mr. Craig, who has been recently looking over the results of these experiments, has considered many of the contrasts between treated and untreated trees sufficiently marked to warrant him in getting photographs of the trees, which will be used in illustrating the report to be issued when the work is finally closed.

On the whole, it seems fair to say that the experiments have been successful, so far, in proportion as the work has been carefully performed. The season has been very unfavorable, owing to the tremendous rainfalls during the months of May and June, at a time when the applications should have been most thorough; then the extreme drought of late summer has prevented the fruit from filling out as it otherwise would have done. Mr. Craig expressed himself highly pleased at the hearty and earnest manner in which the fruit growers of the district took hold of and carried out the experiments committed to their charge, though in the face of many obstacles and drawbacks.

Vinegar Making.—One of the best ways of working up apples that cannot be marketed to good advantage, is by making into cider vinegar. Use sound apples, and have the fruit, the machinery and the vessels clean. Rotten apples will not make cider vinegar, and should not be used. Wash the mill and the barrels out clean before commencing the work. When the apples are ground up, some water may be poured over the pomace before pressing out; then press as thoroughly as possible. Do not fill the barrel more than three-quarters full at first. This will save work. Tack a piece of fine netting over the bung hole after laying the barrel down on its side, putting old rails or sticks underneath as a support to keep the barrels off the ground. It will commence working in a very short time. Let stand in the sun until this quits, and then draw off carefully into other barrels, filling full, and let stand until cool weather. But do not allow it to remain out too late, for it should not be allowed to freeze. By carefully following these directions, good cider vinegar can be made at a small cost per gallon, and much fruit that would either be fed the stock or allowed to go to waste be converted into a marketable product.—Western Stockman.

HOW TO BUILD AN ICE-HOUSE.

EDS. COUNTRY GENTLEMAN.—I use about fifty tons of ice per annum, and have on the place that I have recently purchased the remains of an old ice-house that I wish to utilize. The hole in ground is 12 ft. deep and about 10 ft. square, but the old wooden lining and roof have decayed. In rebuilding, I should like to know, first, whether this is large enough to hold fifty tons, and if not, what size is necessary.

2. Whether wooden lining backed with sawdust when under ground is fairly durable, or whether in long run it would pay better to build of brick.

3. Whether bottom has to be drained and if so, how? If you can give me the above information or inform me where I can get a book containing it, I should be much obliged.

Flushing, L. I. D. L. R. D.

S ice is one-tenth less in weight than water and as, when packed in an ice-house as close as possible, there is some space lost between the blocks, it is safe to estimate the measure of it at fifty cubic feet to the ton. Thus for fifty tons the house should have 2500 cubic feet space for the ice, not counting the spaces around it for the sawdust or other protective covering needed. Thus it will be necessary to increase the size of the excavation to fifteen feet each way, which will give room for the ice and some to spare for the walls of the building and the packing.

Lining of wood under ground will be quickly rotted by the continual moisture and the oxidizing effect of the porous earth, something seldom estimated for such buildings as this Brick or stone should be used if at all possible.

The bottom must be dry; this is indispensable for the keeping of the ice. If the soil is sandy or gravelly, no special drainage will be necessary, and unless surface water is apt to flow into the cellar, the subsoil water will drain away through the soil with sufficient rapidity to avoid damage to the ice. Otherwise there should be a drain laid under the wall all around the building to cut off the water. This drain should be of three-inch tiles, and as well as cutting off the soil water, it will carry off that which collects from the melting of the ice, which it will be safe to provide for.

Some useful information will be gained from the volumes of *Rural Affairs*, in which has been collected in easily available form, a large amount of practical information of daily use to rural residents in all walks of life, including the construction of ice-houses. It may be added that if the walls of an ice-house are of brick or stone, there should be a wooden lining inside, leaving an air space of six inches; or this may be filled in with sawdust, in which case no sawdust will be needed about the ice except on the top of it, and under it, as the walls will be sufficiently non-conductive of heat to preserve the ice during the summer. Otherwise at least six inches of dry sawdust, or tan-bark, or other porous matter as dry leaves well packed down, or the chaff from the clover threshing which is excellent, or as a last resort, finely cut straw or wheat

or other chaff. A foot of either of these should be laid on the bottom, under the ice. The non conducting efficiency of an air space only is about half of that of dry porous packing, but the efficiency of any packing is reduced in proportion to the moisture it may gather, and when saturated it is no better than a solid wall. The air space is more efficient in proportion to its tightness; hence if lined inside with tarred paper and the wall tarred over or plastered and then tarred, the intervening dead air space will be about as good as the ordinary filled-in space that will be sure to gather moisture in time.—Country Gentleman.

JUDGING FRUIT BY POINTS.

The Massachusetts State Board of Agriculture has established a scale of points for judging vegetables. Pamphlet forms, containing cuts and scale of points for two or three of the finest varieties of all the different vegetables, are being issued for the use of the Incorporated Agricultural Societies. This is one advance needed by all agricultural societies, as very often men are appointed to judge at shows who differ very widely in their ideal of a perfect specimen, and by having an authorized scale of points to guide them, much less unjust decision will often be given. As an example of their plan, we give scale of points given for "Beauty of Hebron" potatoes and tomatoes :—

Size—Should be 4½ inches long and 3½ inches wide for perfection—30 points.

Form—Should be according to engraving, as given in pamphlet—30 points.

Smoothness—Free from deep pits, warts, or excrescences—30 points.

Quality—Fresh appearances, freedom from coarseness, and bright color—10 points.

Total 100 points.

The following is the scale of points for tomatoes :—

Form—Should be according to engraving—40 points.

Color—Should be bright red or purplish pink, according to variety—30 points.

Size—Should be not less than 2½ inches and not more than 3½ inches in diameter—15 points.

Quality—Firmness, ripeness and freedom from green spots or cracks—15 points.

Total 100 points. —Farmers' Advocate.

TULIP bulbs as well as others, can be set out as long as the ground is not frozen.

A BUNCH of chrysanthemums makes an elegant ornament for the dining-table. They will last a long time if kept in a cool place between meal times.

Viticulture.

SOME FACTS ABOUT GRAPES.

RAPES prefer southerly exposure, with a well-drained, fertilized and cultivated soil. The beginner would scarcely credit the difference careful cultivation makes, not only in the appearance, but in the flavor of the fruit. The vineyards in the famous grape region from Erie, Pa., to Brocton, N.Y., in August are as free from weeds and as carefully kept as the daintiest flower garden in the land, and the vines cling to the trellises perfectly, with no vagrant branches to accuse their owners of carelessness. There is no other fruit requiring more delicate handling than the grape; if the bloom is rubbed off or the clusters are in any way disfigured, the market value is seriously reduced. As soon as the fruit has ripened, the labor of picking and packing begins. The picker is supplied with wooden trays, each of which holds about 30 pounds when a little less than even full. These trays are made so that they can be piled up in tiers on the grape wagons. The picker takes each cluster by the stem and cuts it from the vine with sharp-pointed grape scissors, and lays it carefully in the tray. The clusters are handled entirely by the stems, and the careful picker lays them in the tray with stems up, so that packers find no trouble in taking them out by the stems. Grapes are usually assorted by the packer into three or more grades. The Niagara Company, says the Rural New Yorker, puts a certificate of excellence on its first-quality fruit, and nothing goes into these boxes that is not absolutely perfect. The clusters must be large and shapely, and the berries large, well-ripened, and of good color. The second-quality boxes contain smaller clusters, but all imperfect berries are clipped out, and all webs and other foreign matters are removed. No loose clusters are packed in these boxes. If fruit is scarce and high, a third quality may be packed with profit, but the fruit left from the second selection is usually made into jellies, catsup, or fermented and unfermented wine. It is said that grapes may be produced at a fair profit for two cents per pound, but unless sold in bulk the margin from such sales must be very narrow. The care necessary to pack the grapes for market render this part of the work expensive, as cheap labor cannot be utilized. True, a great bulk of fruit may be raised per acre, but the average packer will not ordinarily put up more than 500 pounds per day.—Prairie Farmer.

ROOT crops can be kept best by being packed in sand and placed in the cellar.

VARIETIES OF GRAPES.

MY experience with the Brighton would lead me to say it had not been over-estimated. I have long considered it our best red grape. It is early, vigorous, hardy, healthy and productive. Its clusters are large and the quality of the fruit is excellent. The Delaware is, in the estimate of many good authorities, accorded first place in the list of American red grapes, but I must confess a preference for Brighton for a large bunch and berry, greater weight and bulk of fruit, more vigor of vine, and being more satisfactory to eat. It is possible that soils not widely separated may be the chief factor in forming this estimate, notwithstanding the difference in people's tastes. I have never witnessed the half-grown green grapes among the ripe ones of this variety as often seen in others. While imperfect fecundating is a defect in the Brighton, the unfecundated blossoms remain dormant. In some other varieties they sometimes swell and even ripen of pea size, but without seed.

Diamond is a promising variety, not quite as large in berry or cluster as Niagara, or vigorous in growth, but a year or two more in age may overcome these disparities.

Lady is too feeble in vine and too small in cluster, and it cracks and decays too soon for me to recommend. It is very early, sweet and rich, but too uncertain. Green Mountain is the earliest white grape I have, and I esteem it highly. The vine is vigorous, healthy and productive, and the grapes are of medium size and have few seeds. Empire State has not come up to promises, and one vine is enough for one. Woodruff Red is a vigorous grower, and productive, berries and clusters are large, compact and very attractive; it is a beautiful showy grape, but only of medium quality. Although the vine in appearance indicates strong native qualities, it is not sufficiently so to be proof against mildew, and, barring the quality, there is no grape in my collection of seventy varieties that captures the eye more readily.

If I wanted a white grape it would be Green Mountain. If a red one of good quality, Lindley (Rogers 9), though it, like many others, is not always sure of perfect fecundation. If I wanted a black grape I wou'd try Aminia, Rogers 39; Herbert, Rogers 44; Merrimac, Rogers 19; Wilder, Rogers 4, or Barry, Rogers 43. Any one of these, if adapted to the soil, would, I think, prove satisfactory ones to end the season with.—E. WILLIAMS, in Market Gardening.

Keeping Grapes Fresh —The following recipes were given at a fruit growers' meeting in Ohio: (1) Dip the stems of the bunches, where broken off, into melted red sealing wax and pack them in cotton in large pasteboard boxes. They must be kept where it is dry and cool. (2) Toward the end of October cut the shoots with the cluster attached, sharpen the lower ends to a point and stick them into potatoes. Spread the bunches out on straw or dry hay, so that they shall not touch each other. The grapes must be placed where it is dry and cool.

GRAPE JUICE A POPULAR BEVERAGE.

Unfermented Juice.

VERYWHERE there is a good local demand for unfermented grape juice for sacramental and pharmaceutical uses. If a thoroughly good and wholesome article were put on the market in quantities large enough to create a demand for it for table use, there would be an almost unlimited market.

To make sound, unfermented grape juice that will keep well, requires careful manipulation and the most fastidious attention to cleanness during the process The juice as soon as expressed should be strained through two folds of unbleached muslin, and then run at once into a double jacketed covered kettle and heated to 180 degrees F., at which temperature it must be held for twenty to thirty minutes. It should then be removed from the fire and allowed to stand closely covered for twenty-four hours. At the end of this time return to the kettle and re-heat to 180 degrees F., for half an hour, then strain through a thick white woollen cloth into the bottles in which it is to be marketed, or if more convenient, it may be run from the strainer into large glass carboys, or air-tight kegs, holding not more than five gallons. These must be previously disinfected by boiling water, and should be as hot as the juice is when ready to be filled. The vessels, whether large or small, must be filled until the juice begins to run out at the opening, and then corked tightly and the cork or bung covered with wax or resin to make it air-tight. If a wooden vessel is used to store the juice it should have been thoroughly varnished on the outside to make it air-proof. If the juice is run at once into small bottles no further manipulation is required. If it is temporarily stored in large vessels, when wanted for market or consumption it must be once more heated to 180 degrees F. and strained through a woollen cloth into the bottles. When the storage vessel is opened, the entire contents must be removed at once. If allowed to remain twenty-four hours in a partly filled vessel the juice will begin to ferment. This fermentation may be stopped at any time by heating the juice to 180 degrees F., but the character of the liquid as unfermented wine is lost and cannot be recovered. It is of the utmost importance that the juice be heated to 180 degrees F., and neither less nor more. If heated above 180 degrees F., the albumen of the juice will coagulate and greatly deteriorate the nutritive properties, and the taste of the juice will be quite spoiled.

If heated to less than 180 degrees F., the germs of the ferment microbe will not be killed, and the juice will soon begin to ferment. To insure the proper temperature in the kettle a glass dairy thermometer, costing about ninety cents, should be inserted through a hole in the cover and allowed to float on the juice. In this matter guess work will not do. Never, under any circumstances, add

sulphur, sulphite of lime, soda, or any other preservative to the juice. Sugar is unnecessary, and should not be used unless the grapes are unripe.

Grape Jelly.

Grape juice may be evaporated into syrup or jelly. The grape growers of California are beginning to work up a portion of their crop this way. But a first-class article cannot be made without the use of a vacuum pan, such as is used for condensing milk, because, as already stated, if the juice is heated above 180 degrees F. its taste and nutritive properties are injured. Still, a fairly good and wholesome article for home use may be made by evaporating the juice in a double boiler or in a thick porcelain lined kettle. The following is an excellent receipe for jelly: Dissolve two ounces of gelatine in a pint of water with a half pound of white sugar. Put from two pounds to two and a half pounds of juicy grapes into a saucepan; bruise them with the back of a wooden spoon till the juice flows freely from them. Strain the juice and add three-quarters of a pint of it to the gelatine, with the whites and yolks of three eggs. Whisk it well on the fire, and squeeze it through a jelly bag, add a wineglassful of brandy and a few drops of burnt sugar. Pour the jelly into the mould, the top of which should be ornamented with a few grapes. Put it in a cool place to set. If to be kept for any length of time, pour it while hot into tumblers or wide-mouthed jars. Over the mouth lay a piece of parchment paper, such as is used to wrap butter in, and over this lay a piece of the prepared cotton wadding used by dressmakers—the fuzzy side up—bend down the edges and tie tightly to exclude the germs of fermentation.—North Caroline Horticultural Society.

THE LIVERPOOL APPLE MARKET.

JAMES ADAM, SON & Co., of Liverpool, writes:—Shipments from your side have commenced earlier this season than was expected, and are already assuming some degree of importance. In all, some 10,600 barrels have come to hand so far, exclusive of consignments per three steamers just in, the greater portion of which have been auctioned this week, and for early shipments it must be said that the out-turn, in some instances, has been fairly satisfactory. Soft varieties, as is to be expected, have landed in faulty condition, but of the harder sorts some good samples were shown, and, with a fair demand for the best of them, gratifying results were obtained. Poor grades, however, moved but slowly, not being yet wanted, if indeed they will be at all this season, and, in view of the reported abundant yield, we should strongly advise shippers to send forward their best only. Even for good stock, the market at present cannot altogether be relied upon, trade generally throughout the country not being in a flourishing condition, and, while immediate prospects for colored sorts, in moderate quantity, are encouraging, a big arrival, we fear, would send values down considerably.

We quote from the week's sales as follows: New York—Baldwins 12/ to 17/, Greenings 11/6 to 14/3, Kings, 16/ to 25/6, Sundries 10/6 to 16/3; Boston—Ramshorns 11/ to 16/, Gravensteins 11/6 to 14/, and Red Pippins 10/9 to 15/6 per barrel.

Canada, so far, has sent forward very few, and we almost think it will be better if shippers confine themselves to winter stock.

MESSRS. WOODALL & Co., Liverpool, report market very active; good selling at 13/16 and common 9/13 and from MESSRS. L. & H. WILLIAMS, Glasgow. Home fruit no quantity, prospects excellent, if the quality is prime and in good condition; hasten shipments.

MESSRS. WILL & JONES, Buffalo, quote, subject to fluctuation as to receipts:

Apples, fancy red varieties, $2 75 to $3.50; Apples, fancy green varieties, $2.00 to $2.75; Pears, Bartlett and Duchess, per barrel, $3.00 to $3.25; Pears. Sickle, per barrel, $2 25 to $2.75; Eggs, fresh, 18c. to 19c.; Beans, medium and pea, hand-picked, per bushel, 2.00 to 2.10; Turnips, per barrel, 80c. to $1.00; Potatoes, fancy white, per bushel, 70c. to 75c.; Potatoes, fancy red, 60c. to 65c.

SOME INJURIOUS GRAPE INSECTS.

MONG those which appear somewhat early in the season and affect the vines by puncturing the leaves, sucking out the juices and causing them to turn whitish, and sometimes to become shrivelled or withered, is the Leaf Hopper (*Typhlocyba vitis*). Its attacks are generally more noticeable on the thin-leaved varieties, and of little consequence on the thicker-leaved forms, such as Concords and Worden. The Leaf Hoppers pass the winter in the adult state secreted under leaves and rubbish, and begin their attacks on the vines almost as soon as the leaves are expanded, also depositing eggs which produce numerous young, which develop during the summer months, the number increasing rapidly until the vines may be so thickly infested that a swarm of hoppers will rise upon the least disturbance of the leaves.

This insect is not easily treated since it is not affected by any sprays upon the leaves, but any destructive agent must reach the Leaf Hoppers themselves in order to be effective. Spraying with kerosene emulsion, taking pains to reach the under sides of the leaves, is perhaps one of the most effective plans, and is particularly useful while the insects are young, but less likely to affect the adults, which take wing quickly when disturbed, and may possibly escape the spray. A plan which has recently been recommended somewhat is known as the Shield method, and consists in covering a canvas or pasteboard stretched on a frame with tar, and carrying this along the rows of vines. The Leaf Hoppers are disturbed by shaking the vines with one hand, while the shield is held in such position that the insects will hop or fly against the tarred surface and be caught.

The Grape Berry Moth or Grape Seed Caterpillar (*Eudemis botrana*), has not until recently been known as a destructive species in Iowa, but I have learned from a Dr. McDonald, of Des Moines, that a caterpillar which evidently belongs to this species, has caused much injury in his vineyard during the past season. It is a species which will prove very troublesome if it becomes abundant. The insect is imported, and has long been injurious to grape culture in Southern Europe. The larvæ begin to appear in July, when the injured grapes show a discolored spot where the worm has entered. They feed upon the pulp, and sometimes upon the seeds, and if a single grape does not suffice for their growth, two, three or more are attacked, these usually being fastened together with silken threads.

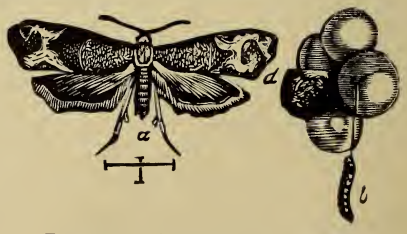


FIG. 697.—GRAPE-BERRY MOTH.
a, Moth; *b*, Larva; *d*, Injured Fruit.

They are said to pupate upon the vines, folding a leaf as protection. Two broods

occur each season, but the injury is not observable except during autumn. Saunders says: "As it is probable that most of the late brood pass the winter in the chrysalis state attached to the leaves, if these were gathered and burned, a large number of the insects would perish. The infested grapes might also be gathered and destroyed. This insect is attacked by a small parasite, which doubtless does its part towards keeping the enemy in subjection."

THE CULTIVATION OF NEAR MARKETS.

MY experience of the last four years has demonstrated at least to my own satisfaction that the small fruit trade of Ontario is capable of being enormously increased. The consumption of small fruit at present is largely confined to city and towns. Country people, as a rule, do not buy fruit, simply because they have never been in the habit of it. When the fruit grower supplies the shops in his vicinity, he imagines he has fully supplied the local need; but he never made a greater mistake, for though the farmer never thinks of buying fruit when he goes to town, yet he will buy it is his attention is called to it or the fruit brought to his door.

This is easily explained. The wild berry has either disappeared or retreated into inaccessable barrens and swamps, but it has left him with a cultivated taste for fruit. And very little management beyond exhibiting the fruit, and calling his attention to the cheapness of it will be found necessary to effect the desired change in the old custom of getting fruit for the picking. One sale, however small, I have found will always turn habit into the new channel.

Strawberries sell most readily, gooseberries the most slowly. And yet my whole crop of gooseberries sold at home this year, and the bulk of the orders were in before picking time, many of my old patrons bringing in orders for neighbors that I was unable to fill. But this may be called peddling, and the fruit grower a peddler, and so he is if the butcher and the baker are. I have no doubts that hundreds of baskets of peaches could be sold in this way in country places.

At a strawberry festival held here late in the season about 100 baskets were left over, and these sold readily at 8½ cts. to farmers who had passed by heaps of them during the season selling at 4 and 5 baskets for 25 cts., and so strong was the demand it was hard to settle who were to have them. One more point. I was filling orders in a neighboring village, and had taken an extra basket of gooseberries along with the intention of experimenting on this line if opportunity offered. I took the basket into a general store, and requested the proprietor to offer it for sale. He thought there was no demand for gooseberries. Three country people were in the shop at the time, and I merely called their attention to the fruit and its cheapness, with the result that one bought the basket, and the other two each left an order. The next day the store keeper sent an order for 6 baskets he had promised through the one basket, but I was sold out.

NOTES ON THE ROSE.

"I dream of a red rose tree;
And which of its roses three,
Is the dearest rose to me?"

IN every age of the world since man first beheld the beauties of earth, the rose has held a prominent place in his admiration and affections. In every age of the world have the poets written of its beauty and its fragrance. And in every age, till the end of time and all things perishable, will they continue to do so; and not then will the theme have been exhausted.

The season just past has not been a satisfactory one to the rose-lover, inasmuch as it has been too brief. The early opening of spring advanced the bushes too rapidly to bear without injury the heavy frosts of the latter end of May. And then came several weeks of cold rains followed by an intense heat and continued drouth. A season of extremes and sudden changes is the very reverse of a favorable one for roses. But though the blooming season was short, and the bloom not so heavy as the year before, there has been a splendid growth of bush; and if other conditions are favorable, an extra season may be looked for next year.

The HORTICULTURIST for July gave an extract on the rose, from "Gardening," in which a long list of varieties suitable for outdoor cultivation, was named. That list contained many very choice sorts, well suited for the localities further south than this, but very unsuited to Central Ontario. Lest some of your readers might be misled into trying some of the varieties named, I would, as one having had some sorrowful experiences, warn them to select with caution.

In advising in the matter of a selection for an amateur, to begin with, I would observe the same principle urged by our Society in the selection of an apple orchard—avoid too many varieties. I would, with Mrs. Lambert (See HORTICULTURIST for August), begin my selections with the General Jacqueminot. Of that variety I always plant two roots together, or rather within a few inches of each other, in order to get a large bush and a heavy mass of bloom. With the exception, perhaps, of the Fontinelle and Prince Camille, I would let all other dark varieties alone and repeat Jacqueminot. My next favorite is Magna Charta, though its short blooming season is a sore defect in so beautiful a rose. John Hopper, Mrs. John Laing, Anna de Diesbach, all choice sorts, I would pass by and repeat Magna Charta, though from the former you may get a more continuous bloom throughout the season. For a still lighter color take Gabriel Luizet; and for a pure and pretty white, Mad. Plantier. The Luizet will bloom

more or less throughout the season, but Mad. Plantier will not extend its season beyond the second week in July. To complete the collection I would take the common English Moss and the Glory of the Mosses. Either one or both will add greatly to any collection.

My method of cultivation is to cut out all two-years' wood at the end of the blooming season (about the middle of July), and manure heavily by removing the earth from the roots of the plants, and covering in as much well-rolled manure as I can. With this treatment, together with occasional showering in dry weather, the Jack and the Luizet will continue to bloom more or less all the season through; and even the Magna Charta will not refuse to respond, as I have at this date one or two bushes bearing a second load of handsome b'ossoms. For winter protection there is nothing like the snow; but I always bend over and protect with a light covering of leaves or clean straw. In spring, as soon as the leaves are out I spray with Paris green, about the same strength as I use for fruit trees and currant bushes. I repeat this treatment a few weeks afterwards, and find no other treatment necessary. My assortment this year comprises about seventy varieties, some of which, besides those mentioned, I will refer to again.

T. H. RACE.

Mitchell.

PEDDLING FRUIT.—The young man who peddles a good article of fruit and vegetables of his own growing from door to door will grow faster in all legitimate knowledge in the line of his business than if he deals entirely with middlemen. He learns and operates two kindred trades and gets most of the profits of both.

He learns to grade his products, and put them in the most attractive form, and after a while gets his eggs into a number of baskets, and thus in spite of adverse seasons of storms manages to have considerable to sell all the while. This idea that it is degrading to offer an article for sale from house to house interferes greatly with the profitable sale of odds and ends of fruit and garden stuff on many small farms or village lots. For example, during the last two weeks Astrachan apples and Early Harvest pears have sold as low as 35c. per bushel, but consumers have readily paid from 15 to 25 cents per peck for the same, for the dealers asked even more than that. I sold 35 quart boxes of the Mary pear from a small pear tree for a nickel a box, and as they were sold in connection with a load of apples, sweet corn, tomatoes (also in boxes), blackberries and cabbages, the selling took scarcely any extra time. Perhaps I could have found a dealer who would have given me a half-dollar for the lot in bulk, but I might have had to offer them to a dozen or fifteen grocers before selling. They were small but bright yellow with a red cheek, and very attractive in the way I offered them. I have sold early peaches and plums in the same way at double what dealers would pay in bulk.—Green's Fruit Grower.

BULBS AND TUBERS.

THE principal cause of loss of bulbs and tubers, such as dahlias, cannas, gladioli, etc., is that they are not sufficiently ripened before being stored away for the winter. Those who have a greenhouse can ripen them under the stage, but those who have not will find it the best way to put a hot-bed frame on a dry spot in the garden, facing the sun, and lay the bulbs or tubers inside of it. Put the glass on and give a little ventilation, except when it rains, when the glass should be pulled shut. The tops should be cut down to two or three inches from the ground after the first freeze, and they may be left in the ground if you like till the middle or end of October—according to the locality—and kept in the cold frames until there is danger of their freezing through the boards and glass. They can then be kept in a cool cellar till spring—the gladioli in small baskets, say 10 lbs., so as not to have too many together, and hung up out of the way. Dahlias and cannas keep best, I fancy, in dry sand. It is better not to split up the bunches of tubers till the spring, when the eyes can be readily distinguished.

A good many people are growing the little hybrid tea roses sent out at 25 for one dollar by the Websters of Hamilton, and other firms, and are finding them very satisfactory. I wintered a lot of these last winter by pulling them up and planting in boxes and keeping in a cold cellar, watering perhaps once or twice if the ground got very dry, but they don't want to grow any. Mr. Webster advised me to build a little shanty of rough boards, four feet high in front and three feet in rear, over the rose bed, and fill in to the top with dry leaves, then cover over with boards to shed the rain. He says nearly all the plants will winter and come out fresh and good in the spring. The shanty could be built any time, but I would not put in the leaves and cover them over till hard winter sets in. This looks reasonable, and I intend to try it. One thing is certain, these little roses give infinitely more satisfaction than the hybrid perpetuals or remontants, as they bloom from May to November, while the old kinds give a wealth of bloom for a few weeks and then are about done, and are too often unsightly, untidy objects for the bulk of the season. The teas, too, do not seem so susceptible to the attacks of insect pests of various kinds. If they can be successfully wintered, the problem of rose culture is pretty near settled.

It may have escaped your notice that the original McIntosh Red apple tree has been destroyed by fire. Mr. Allan McIntosh's house at Dundela, in Dundas County, was burned the other day, and the tree along with it. The tree was 85 years old, of immense size, and still bearing fruit. The McIntosh Red is one of the most highly esteemed varieties in Eastern Ontario, being superior in looks and flavor to the Fameuse.

The crop of apples in this vicinity is unusually good, both as to quantity and quality. The show at Cornwall fair this week was larger than ever before, and included some of the best winter varieties. The first prize Spys were perfect in every way. It used to be thought that Spys and such hard apples could not be grown here, but that was evidently a mistake.

Our local grape king, W. A. Roys, of Maple Grove, has marketed over 10 tons of grapes in Cornwall, including some of the choicest varieties.

Cornwall, Ont. C. W. YOUNG.

AN ATTRACTIVE RUSTIC VASE.

SIMPLE and inexpensive devices for the decoration of lawns are often more attractive and beautiful than conventional urns or lawn vases, no matter how elaborate or costly they may be. It is true that such vases often possess more grace of form than is usually imparted to rustic work, but the artistic effect produced by the soft coloring of natural woods more than compensates for this. The illustration shows the promotion of a prosaic lard barrel from the depths of a grocer's cellar, to a conspicuous place on the writer's lawn, where its use is obvious and its beauty appreciated. There is, I find, a great lack of

Fig. 698.—An Inexpensive Flower Stand.

adaptability in old tree stubs and the prevailing sizes of tubs and barrels to the convenience of their owners. The perpendicular sides of tubs are objectionable, and there seems to be nothing in the ready-made circular style of receptacles between sugar barrels and hogsheads, except lard barrels. These come nicely hooped at the ends with bark-covered hoops.

The section used in this case measures six feet in circumference, and the tree stub about four, with an entire height of three and a half feet, which makes a fairly well proportioned vase, with little expense or labor. To insure durability this barrel was charred inside, and good drainage secured by boring holes in the bottom near the edge. The soil for the class of plants used must be rich in all the good things which horticultural knowledge can supply, and a liberal supply of water given every day, which is, in fact, all the care required after the plants are placed.

The beauty of any such arrangement depends largely upon the selection and disposal of the plants. The combination shown in the illustration is particularly happy. Two common green cannas were planted a little back of the center, while in front and between the other two is a bronze-red variety, with a bright yellow coleus on either side of it as an excellent foil to throw out its color, and a dash of blue lobelia in front and between the two; these, with caladiums placed on either side and at the back, and given a red relief of coleus plants, form a rich and artistic mass of color, greatly heightened by the soft gray and brown beneath it. The artful bit of drapery at the side adds to the picturesque effect, but was only a subterfuge to hide the bare place on the stump where a boy indiscreetly pulled off the loose bark instead of nailing it back in place. A strip of poultry netting tacked across prevents further pulling of the bark, and supports the morning glories and nasturtiums. *Ampelopsis quinquefolia* is also growing at the base, and is eventually expected to take the place of both, which will be desirable because of its permanency. The cannas, caladiums and coleus have had a glorious time all summer; a more luxuriant growth would be hard to find; the cannas reached a height of four feet, and the red blossoms looked beautiful in the air nearly eight feet above the green grass at the base of the stump.—Orange Judd Farmer.

Japan Maples.—The maples from Japan are likely to become as popular in this country, in time, as the chrysanthemums have been for the last few years. They are especially adapted by their diminutive size and brilliancy of colors to garden decoration. The Japs use them in this way. Where a change of color is desired in their gardens, a pot is sunk in the ground, and one of the richly-colored maples planted. The fine, delicate, fern-shaped leaves of some of the varieties make a grand display at a short distance off, when the lacy veining of the leaves can be seen traced in all their beauty. Other varieties, where the colors are more solid and the leaves larger, look better when at a longer distance. They make a good foreground for lawn scenes, and have a grand effect in small parks.—Vick's Magazine for December.

GATHERED LILIES.

"My Beloved is gone down into His garden to gather lilies."—Cant. vi : 2.

BEAUTIFUL flowers, in wreath and boquet,
On casket containing one fairer than they ;
A flower celestial, that earthward did stray,
To gladden with beauty and fragrance its day ;
To bloom, and then wither, and vanish away
From earth's cold and darkness, to heaven's bright day.

Beautiful flower, more precious than gold,
Or jewels,—of worth that can never be told ;
A flower that drew its rich life from a heart
That breaks in its clinging, and effort to part
From its dear cherished treasure,—ah me, let me fold
Thee again to my bosom ;—oh, death, thou art cold !

Beautiful flower—pale lily to-day,
It was like to a beautiful rose bud in May ;
Alas, that such beauties so transient should be,
And pleasures and hopes should so suddenly flee ;
But thanks to the wisdom that orders in love,
And gathers our lilies for gardens above.

W. H. PORTER.

Brantford, August, 1894.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE WASHINGTON PLUM.—Mr. J. B. Patterson, Hamilton, sends us samples of a plum for name. They are probably Washington, one of the best of dessert varieties, but not productive enough for profit.

SOME LARGE PEACH ORCHARDS are reported by the Blenheim News, as being situated between Troy and Caledon Springs, aggregating in all about 10,000 trees in bearing. Dr. McCully thinks it quite as important a point for a peach experiment station as Leamington.

THE RUBY PLUM.—Mr. S. Hunter, Scotland, sends us (September 8th), samples of a seedling plum, which he says is a great bearer. He says it is an excellent variety for canning. The samples are a trifle larger than Lombard; the flesh is firm and rather dry; quality ordinary. It would be an excellent shipper.

A MAGNIFICENT PEACH ORCHARD.—One of the finest peach orchards in the Niagara District is owned by Mr. George Smith, the well-known breeder of Jersey cattle and Shetland ponies at Grimsby. Although only three years planted, the trees are as large as most six-year-old trees, and are loaded with Crawfords of the most magnificent size, and the highest color. These trees will probably average two bushels per tree, something unprecedented in peach culture. The explanation is the wonderfully fertile soil, enriched by constant manuring. The reason so many of our fruit growers are unsuccessful is, that they have too much land, and can neither cultivate nor fertilize it sufficiently to make it yield a paying crop.

THE SUPERLATIVE RASPBERRY, from Messrs. Elwanger & Barry, planted last May, is fruiting just now, July 16th, in our Experimental grounds at Maplehurst, and the flavor is certainly very fine, justifying what the introducers say of it that it is *par excellence* a dessert kind.

Of course it is quite too soon to say anything about its productiveness, which is so important a point with all commercial growers, but we have distributed plants to each of our Experimental Stations, whose report will be published annually. The following is the description given of the introducers :—Large, conical, handsome ; dull red ; six good berries weigh an ounce. Canes stout, supporting themselves ; a heavy cropper.

FIG. 699.—SUPERLATIVE RASPBERRY (Natural Size).

APPLES IN ENGLAND.

MESSRS. WOODALL & Co., of Liverpool, writes :—The greater portion of arrivals to date have been from New York State, and for so early in the season the quality, generally speaking is considered satisfactory, the fruit, though small and wanting color, being remarkably clear and free from grubs. Some early varieties landed out of condition, and we think shippers would do well to keep these at home, as they have the effect of disorganizing the market and getting prices on to a low basis. The first Kings sold from 18/ to 25/6, according to size and color.

Some Red fruit received from Boston brought fair rates, but were somewhat soft.

The demand is active, and we look for an excellent trade when the color improves, and there should be a better chance for shippers than for many seasons past.

Question Drawer.

Strawberry Rust.

674. Sir,—I notice this season that on some of my strawberry plants which I take to be anthracnose. Is the Bordeaux mixture as good as any for this fungus?

Robt. Scott, *Carluke, Scotland.*

The disease to which our correspondent refers is no doubt the strawberry leaf rust which so largely interferes with vigorous growth of the plants of many varieties. The Bordeaux mixture is the best remedy so far as we know. The vines should be first sprayed with this mixture when the first fruits are set and again as soon as the crop is harvested, and even a third application may be given if the foliage shows the rust later in the season. In addition to this it may be well to give an application of ammoniacal carbonate of copper just as the first fruits are ripening, because at this time the Bordeaux mixture would cling to the fruit and make it unsalable.

Renewal System.

675. Sir,—In the August No. you speak of training grapes the renewal system. Would you please explain what this means? C. M., *Montreal, Que.*

This has been explained several times in back Nos. of the Canadian Horticulturist, but, if desirable, will be given again with illustrations at the proper season. It is the method of training adopted with continental varieties of grapes by which the new growth is annually cut back to the old wood. Usually two arms are grown upon the lower wires about two feet from the ground. These are allowed to grow about four feet in length, when from each of them three or four upright stems are turned. Every spring these are cut back to within one bud of the old wood, or with some varieties every other upright stem is annually cut back. In this way the new growth is always kept near the ground, the vines are trained in a tidy shape and the finest fruit is produced.

A Cheap Greenhouse.

676. Sir,—Would you please inform me whether a greenhouse 25x12 could be satisfactorily heated from the furnace in the house? Also, what would be the probable cost of a greenhouse of that size. O. F. B., *Kingscourt, Ont.*

On pages 74 and 310 of volume 1892, some cheap greenhouses are described and illustrated. Possibly one of these might meet the requirements of our correspondent. We would ask any of our readers acquainted with this kind of work to please write us an article fully answering our correspondent. If drawings could be furnished to illustrate the article, we would have them engraved and be much obliged for the trouble taken by the writer.

New Hybrid Plum.

677. SIR,—I send you six samples of a new hybrid plum and would like to know your opinion of them. The tree appears to be hardy and a great bearer.

R. TROITER, *Owen Sound, Ont.*

These plums are a fine sample of prune and seem to be worthy of careful testing. We have shown Mr. S. D. Willard, of Geneva, N. Y., some samples, and he says that from the appearance of the fruit he would regard the plum with great favor, but of course there are so many other points to be considered as regarding habits of growth, etc, that it seems premature to give any decided opinion.

Mr. George Cline, of Winona, thinks the plum would be a valuable one for the grower, possibly rivalling the Grand Duke, because the quality is good and the size, color, shipping qualities and season of ripening are all that can be desired. The great question is, whether the tree is a good grower, with strong foliage and a heavy bearer.

Three Insects Described.

678. SIR,—Can you give me any information respecting the three insects described below.

1st. A beetle, or rather bug (judging from the scent-bottle which he carries) appears on red currant bush about when the berries are forming. He is then dark grey in color and soon turns to dark green. Very nimble. I blame him for nipping off the berries. A little over ½ inch long and say ⅜ across the shoulders. Shield shaped.

2nd. This succeeds the former, making appearance about the end of July, but is perfectly oval in shape, with a fine line of pink round the entire oval back, and somewhat smaller in size. Disappeared after two or three days.

3rd. A very beautiful little moth or butterfly, makes its appearance when the lilacs are in bloom. Easily mistaken at a little distance for a small Humming Bird from its flight and poise on the wing while dipping its bill into the flower. Body from 1¼ to 1½ inches in length, with a flat fish tail tripartite; has two bars of bright yellow on the lower part of the back, the rest of the body a beautiful bright brown. Appear only when the lilacs are in bloom, in considerable numbers, and when the flowers die they disappear. If you can tell me where to get information about these insects I shall feel much obliged.

JOHN J. WATSON, *Rockingham.*

Reply by Prof. James Fletcher.

In the absence of specimens I cannot, of course, be certain, but from the drawing and description I should judge that they are as follows:—No. 1., a plant bug found on red currant bushes. This I think must have been the Placid Soldier bug (*Podisus Placidus*) a well known enemy of the Currant Saw fly larvæ. It is sometimes very useful in destroying this injurious caterpiller. It is not in the least likely to have been the insect which bit off the berries as it has no jaws with which to do this work.

No. 2, it seems to me, from the description, may be the Green Cedar plant bug (*Penatoma juniperina*), but we here generally find it on cedar trees.

No. 3, the moths which Mr. Watson saw around the lilac bushes when in bloom. These were evidently one of the species of Humming-bird Hawk-moths. There are two or three species which appear at the same time and closely resemble each other. The caterpillars are found on honeysuckle and willows. The moths are quite harmless.

As Mr. Watson has observed, their time of appearance in the perfect moth condition is just at the time when lilacs are in flower.

The Wild Cucumber Plant.

679. SIR,—I enclose slip of plant which no one here seems to know. Is it Ginseng?

S. GREENFIELD, *Ottawa.*

Reply by Mr. John Craig, Central Experimental Farm, Ottawa.

The plant sent for name by Mr. Greenfield is the well known creeper *Echinocystis lobata* or Bladder Cucumber. It is a very common plant in cultivation here, where it is grown on houses as an ornamental creeper under the name of Wild Cucumber.

The Ginseng is quite a different plant, not being a creeper at all, but a herbaceous perennial which sends up a single stem every year which bears three leaves of five leaflets each, and in the center of which is borne a single cluster of flowers which, later in the season, produces a bunch of beautiful scarlet berries. The Wild Cucumber is an annual.

FIG. 700.—ARALIA QUINQUEFOLIA.

George H. Stahl, of Quincy, Ill., manufacturer of the well-known Excelsior Incubator, has found it necessary, owing to the rapid growth of his business, to seek new and larger quarters where his capacity will be equal to the increasing demand. The new plant will be five stories high, giving a floor space of 35,000 square feet. It will be thoroughly equipped with the latest appliances, operated by electricity, and capable of producing, if necessary, a hundred Incubators a day. That there is a reason for such a step as this during these dull times will be apparent to every thoughtful reader. It means, on one hand, that the poultry business must be in comparatively healthy condition; on the other hand, it reflects the greatest credit on Geo. H. Stahl and his business methods.

The Excelsior Incubator has grown from the mere germ of an idea to the most perfect apparatus of its kind possible to conceive. Perfect in every detail, automatic in operation, never failing in results, it offers possibilities to the enterprising poultry raiser which but a few years ago were unthought of. The greater percentage of eggs possible to hatch, and the great reduction in cost over old methods makes the Excelsior Incubator the best assistant that a poultry raiser could possibly enyoy. Another reason for the great success of the apparatus is its remarkable durability and the comparatively small price at which it is sold. Those who are now engaged in poultry raising, and those who are studying its possibilities as a source of profit, will do well to send 6 cents to Mr. Stahl for his catalogue. It contains much valuable information about incubators, brooders, and poultry raising in general.

Our Fruit Table.

Peach for Name.

SIR,—I herewith send you a sample of peaches I am growing in my garden. They are from the pits of some California Crawfords planted four years ago. Please give me your opinion of this variety, and also tell me the best time and the best stock on which to graft.

LOUIS CLARK.

This sample does not resemble a Crawford in the least, for the latter is a yellow-fleshed peach, and this is a white-fleshed peach, somewhat resembling the Mountain Rose. It is not so good in quality, however, as the Mountain Rose, and being of the same season, is not desirable for propagation.

Peaches are never propagated by grafting, but always by budding. Seedlings are raised from pits of any healthy trees and used as stock upon which to bud. They are kept in the earth until early spring, when they are cracked and the kernels planted in rows. The following August they are large enough to bud. Then buds are cut from the young growth of the varieties it is desirable to propagate. At the proper time for budding, we will give full instructions for carrying out this work, if any of our readers ask for it.

British Columbia Greening.

Mr. W. E. Brooks, of Mount Forest, writes us concerning the British Columbia Greening which, in his opinion, even surpasses the Green Newtown Pippin in quality. It is, he says, a fine, crisp, juicy apple of excellent flavor. It much resembles the book description of the Canada Reinette, but, if it is the same apple, he considers that our committee have not given it enough marks for quality to this apple in the catalogue.

A fine seedling peach comes to hand (September 22nd), from Mr. Alexander Johnson, Collingwood. It is about 2¼ x 2½ inches in size, yellow flesh and free stone, resembling the Early Crawford in appearance, with equally good flavor, but smaller. Its season should make it valuable if it is very productive; and from Mr. Johnson's statement this would appear to be a characteristic, for he states that the tree produced thirty-eight pounds the first time fruiting.

PRESERVING TIME.

SAID Mr. Baldwin Apple
To Mrs. Bartlett Pear,
"Your growing very plump, madam,
And also very fair.

"And there is Mrs. Clingstone Peach,
So mellowed by the heat,
Upon my word, she really looks
Quite good enough to eat.

"And all the Misses Crabapple
Have blushed so rosy red
That very soon the farmer's wife
To pluck them will be led.

"Just see the Isabellas;
They're growing so apace
That they really are beginning
To get a purple face.

"Our happy time is over,
For Mrs. Green Gage Plum
Says she knows, unto her sorrow,
Preserving time has come."

"Yes," said Mrs. Bartlett Pear,
"Our day is almost o'er,
And soon we shall be smothering
In syrup by the score."

And before the month was ended
The fruits that looked so fair
Had vanished from among the leaves
And the trees were stripped and bare.

They were all of them in pickle,
Or in some dreadful scrape;
"I'm cider," sighed the apple;
"I'm jelly," cried the grape.

They were all in jars and bottles,
Upon the shelf arrayed;
And in their midst poor Mrs. Quince
Was turned to marmalade.

GEN. GRANT CRAB.

Enormously productive, handsome and of good quality ; tree quite ornamental when in flower and in fruit.

THE

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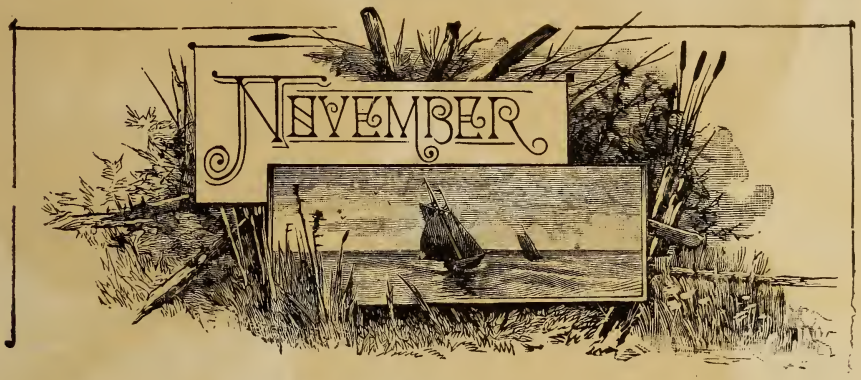

GENERAL GRANT CRAB.

FOR a long time the Siberian Crabs (*Pyrus baccata*), were only valued as ornamental trees. The flowers were so handsome and profuse, and the clusters of beautiful fruit so dense, that in either stage the tree was counted worthy of a place near the house. But of late so many improved varieties have been produced, that these apples are beginning to take a place among apples proper, and to be planted for their use, as well as for their beauty. Especially is this true in the more northerly sections where hardihood is the characteristic of first importance. Always valuable for cider, preserves and cooking purposes, some varieties like the Whitney No. 20, which is counted of superior value for drying and canning, the Martha, the General Grant, and others, deserve, and are esteemed to possess considerable value for some sections.

Fine samples of General Grant were placed on the tables of the Canadian Fruit Exhibit at the World's Fair, by British Columbia fruit growers; much larger than we grow them in Ontario.

The *General Grant Crab* is thus described by Downing:—Size large for a crab; round, oblate, warm yellow ground, with broken stripes of dark, becoming, on the sun exposed side, entirely red, with a few minute light dots. Stalk slender; cavity open, moderately deep; calyx closed; basin broad, not deep, but conspicuously furrowed; flesh white, moderately fine-grained; not juicy; very mild sub-acid; core large for size of fruit; late autumn.

THREE USEFUL LEVELS.

FIG. 700 represents a drain level. It is very handy for leveling a lawn, etc. It can be made as true as any spirit level that you buy at stores; it costs less, and is much handier in many ways. A is a board 10 feet long, 8 inches wide, and 1 inch thick: plane it nice and level, then take four strips 3 inches wide half an inch thick, and 6 feet in length, saw these strips at both ends like b b; nail two of these on one side of board A, like the three small dots, about 18 inches from centre board A, and nail other two on the other side of board A; then place the triangle piece, like C, between the four upper ends, indicated by a dotted line; then nail firmly. G indicates an eye fastened under C in centre to tie the line d; F is a piece of board 1 inch thick, 5 inches wide, and long enough to fit between the four strips like cut shows. Fasten one end of your line in the eye, tie a pencil on other end and mark your piece F all along, which will make a curved mark. Saw in this mark, then tie your plumb bob so it will almost touch all along the surface of this hollow, and make an O; this will indicate true level. Then raise one end of board A and place a piece of board 1 inch under it, where the plumb bb shifts, to make another mark; add one more inch, make another mark, and so on to the end. Then mark the other side of centre just the same; between each of these marks, make a similar mark to indicate half inches.

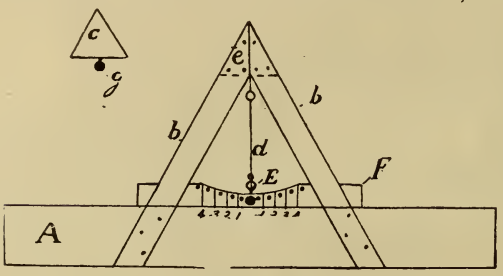

FIG. 700.

Fig. 701 represents an upright level, very handy in building sheds, or planting, tree, fence-posts, etc. You may have them to lean as you like or be perfectly straight. A is a piece of board 1 inch thick, 15½ inches long, 4½ inches wide; after being cut as illustration shows it will be 4½ inches at one end and 2½ inches at the other end; B is a plumb bob, c is a line, d is a piece of wood 1 inch square, 5 inches long, nailed on one end of a piece of board F 3 feet, 2½ inches long, 1 inch thick, and 3 inches wide; E is a hole 4 inches long, 1½ inches across. to enable you to place your four fingers through and have a good hold of it; g is a small hole ½ an inch from end of d; place your line through it and make a knot, so your plumb bob will almost touch all along the upper edge A, which is marked with long marks representing inches; small ones or dots for ½ inches. If the small hole g is 1½ inches from F, make the mark O on board A, 1½ inches from

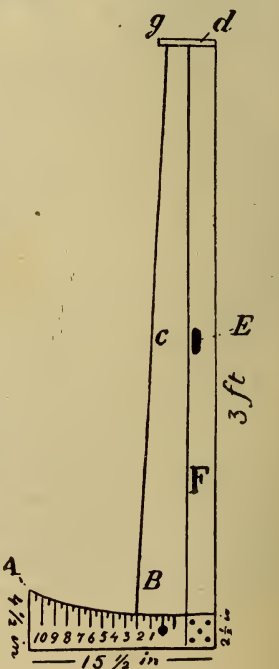

FIG. 701.

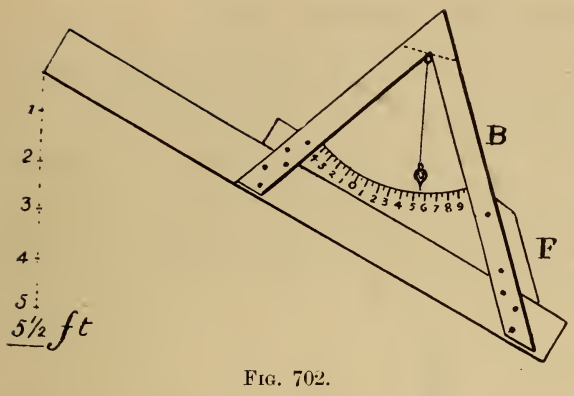

FIG. 702.

F, at lower end. As it stands it indicate a slant of 2½ inches per 3 feet. If outside edge is made perfectly square, you may use it as an horizontal level and as a square also.

Fig. 702 represents a level something like Fig. 700, only two of the uprights B at right hand of illustration are 2 ft. longer which allows the plumb bob to swing much further at one end so you may guage a much steeper grade. The illustration shows a slant of 5½ feet per 10 feet. The longer you make the uprights B the more spare you have for marking the inches on F.

Montreal, Que. O. GAGNON.

Unfermented Wine.—Take perfectly ripe native grapes, pick from stems, discard all imperfect berries. Mash slightly (not mash seed), press out the juice by any of the known methods and separate the juice from the pulps by straining through coarse cloths, or otherwise. Then add 1½ lbs. white sugar to each gallon of must or juice. Boil in a copper or brass kettle for 40 minutes, then remove from fire and filter again so as to remove all sediment. Filtering paper kept by druggists is best to filter through. The filtering is slow but perfect. After filtering and when juice is cool, put in strong bottles, cork and wire similai to pop soda. A cool cellar where the temperature is regular and does not freeze in winter is the best place to keep wines.—Farm and Home.

The Time to Plant Evergreens. — Evergreens differ from deciduous trees in the fact that there is no time of year when they are not evaporating a considerable amount of water through their foliage. But this evaporation is greater at some times than at others, the largest amount being from the new growth in early spring and summer. As a consequence of this evaporation there is unusual call upon the roots for moisture. If the soil is warm and moist new roots put out rapidly. At the beginning of the new growth, or a little before, it is therefore the best time to plant evergreens. We notice that some leading nurserymen advise planting evergreens late in summer or early fall. Their argument is that the soil is then warmer and in better condition to stimulate cool growth than it is earlier. We do not doubt that with care evergreens may be successfully planted in August or September, but there is then a considerable new growth of leaves which must be checked by transplanting. It would seem to be much like planting deciduous trees in midsummer. It may be done, bu there must be more chances of failure than if the experiment be tried in late spring before any new growth had been made.—American Cultivator.

PRUNING THE DWARF PEAR.

THERE are very few fruit growers in Canada who know anything about pruning the dwarf pear in proper shape and manner, but for the most part they train all fruit trees in the same way. The best form for the dwarf pear is the pyramid, as shown in the annexed engraving. The first year a thrifty upright is aimed at; the second year the side branches are grown and cut back to within a few inches of the upright stem, taking care to encourage longer growth at the

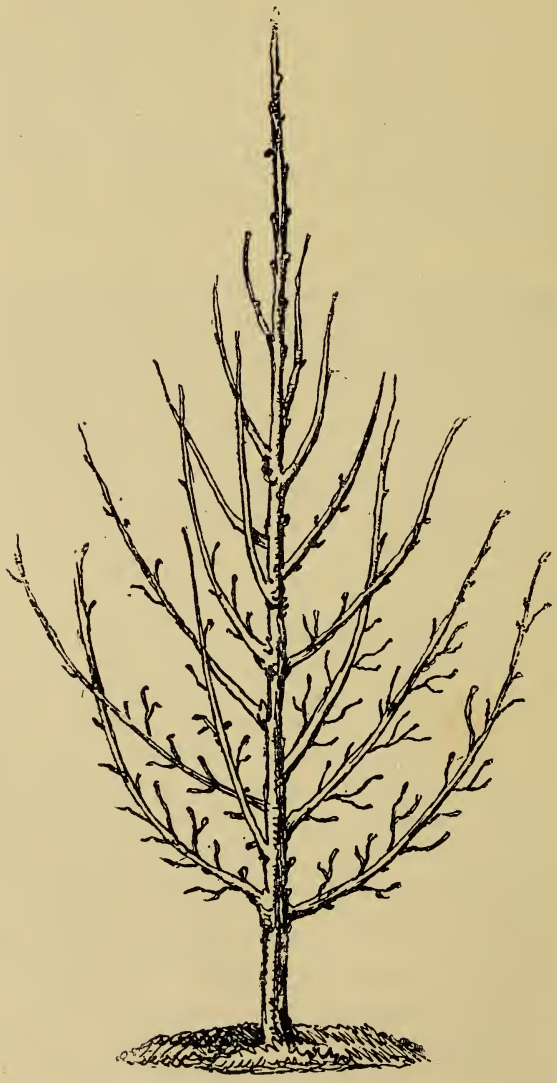

FIG. 703.

bottom than at the top. The third or fourth pruning will bring the tree into somewhat the form shown in Fig. 703.

The leading shoot is cut back in proportion to its vigor at every annual pruning, and the laterals shortened on the same principle. The lowest branches are always kept the longest, and, when they are not sufficiently vigorous, the weaker must be favored with the longer pruning.

After the dwarf pear has been set six or eight years it will be about full size, and the object will be simply to lessen the wood growth and encourage fruitfulness. This is done by pruning the young shoots still shorter. Should there be too many fruit spurs produced, it may be necessary to thin them out more or less.

An orchard of dwarf pears, so pruned and loaded with fruit, is an interest-sight, and a pride to the owner.

THE FALL AND THE WINTER BLENHEIM ORANGE.

I THINK I am beginning to understand the conflicting statements as to the Blenheim Orange being called by some people a fall apple, while I called it a winter apple. Following the dry August, the whole of the apples on four or five Blenheim Orange trees began to fall early in September, and the "Equinoctial" of the 22nd September stripped the trees. The fruit was large, fully ripe and colored, and showed that it would not keep at all. At the same time eight or ten other trees alongside held their fruit firmly through all the winds, and the apples on them were clearly immature, not fully grown, not colored, and hard and firm. I sent specimens to Mr. Craig. He pronounced those that had fallen to be the typical Blenheim—the others a later variety of the same. He adds, "In this instance the variation is worth perpetuating." I quite agree with him, for the later ones will keep till the end of winter, or even into May, while the early ones will hardly keep till Christmas. The difference between the two classes of trees has been noticed before, but it has never been so noticeable as this year, when the dry season ripened the earlier variety before its time, while the September rains apparently checked the ripening process in the later variety.

Peterborough, Ont. E. B. EDWARDS.

Dishonest Apple Packers.—Apples have been received in this city during the week that were faced with splendid fruit at each end of the barrels, but the middle was packed with small rubbish. In one of these instances a car load which was ordered to be shipped from the West direct to England was stopped here and examined, and was found to be dishonestly faced at each end by a layer or two of fine large apples, while the middle of the barrel containing the bulk of the fruit was small and very inferior. If this is not obtaining money under false pretences, we would ask what is? Packers, beware!—*Trade Bulletin.*

MANURE FOR PEACH TREES.

THE peach tree grows so easily and so luxuriantly, and over such a vast extent of country, that few think of supplying it with other nutriment than is found naturally in the soil. Without doubt this is sufficient in many cases, particularly in the newer portions of the country. But every year of cropping in the usual way lessens the fertilizing ingredients laid away in the earth in bygone centuries, and fruit trees, as well as corn, wheat, etc., suffer by its diminution. Indeed, fruit-bearing, particularly bearing heavy crops of large fine fruit, makes one of the heaviest drafts, if not the heaviest of all, on the land.

Among fertilizers, one of the most important for most crops—and particularly for fruit trees—is potash in some form. This is easily applied in wood ashes, none of which, even if leached for soap-making, should ever be wasted. It is very trying to see ashes emptied out in the road or by the side of a run, as has been observed more than once. The ashes may be applied whenever convenient; not around the trunk where they can do little good, but scattered over the entire surface as wide as the branches extend. Anyone who has tried this must have noticed the fine growth of the trees and the thrifty dark green of the leaves afterwards.

It is not probable that ashes will cure the yellows now becoming so common in some sections, though at one time there was considerable hope in this direction. But prevention is better than cure; and there is good reason to believe that a peach tree kept in vigorous health will be able to resist the yellows; just as perfect health in the human system prevents, or throws off, many forms of disease. Barnyard manure is also a good fertilizer for peach trees, as well as for most other things dependent on the soil. But it should be remembered that ashes, or anything containing potash, must not be applied at the same time with barnyard manure; for the ammonia, one of the best elements in the latter, would be liberated by the potash and lost. Six months at least should intervene between the application of these two valuable fertilizers,—the best probably, of all fertilizing materials, considering everything.—National Stockman.

NUMBER ONE.

"I tell you," said Robbie, eating his peach,
And giving his sister none,
"I believe in the good old saying that each
Should look out for Number One."

"Why, yes," answered Katie, wise little elf,
"But the counting should be begun
With the other one instead of yourself,
And he should be Number One."

—CHARLES R. TALBOT, in Faith and Works.

FRUIT EXPERIMENTS—OTHER STATIONS TO BE OPENED—THE BEAVER VALLEY.

OR some time past the Board of Control of the Ontario Fruit Experiment Stations has been desirous of establishing a plum station somewhere on the southern shore of the Georgian Bay, because this region is already famous for its productive plum orchards. It, therefore, seemed desirable that the growers of this fruit in that and other sections should receive every encouragement. A station of this kind, at which all the varieties of a single fruit are grown, can accomplish much for the growers of that fruit in many ways. For instance, (1) by correcting the misnamed varieties which are grown in the section, (2) by introducing little known varieties which are profitable in other sections and might possibly be remunerative in that section also, (3) by testing new varieties, (4) by conducting various experiments in spraying, in fertilizing, in pruning and in cultivation, the results of which will, in due time, be reported for the public good.

The Minister of Agriculture has placed this whole work under the joint control of the Ontario Fruit Growers' Association and the Agricultural College at Guelph, hoping in this way to attain the very best results.

Mr. Woolverton reports the whole country along the southern shore of the Georgian Bay as abounding in beautiful scenery and in suitable soil for the growing of fruit, particularly the plum and apple. The Beaver Valley, especially, is most delightful. From Thornbury, near Meaford, this valley winds among the heights of the "Blue Ridge," or "Mountain," as we call it in the Niagara district, for twenty miles back to Eugenia Falls, affording some of the most picturesque scenery in Canada. The finest plums in Ontario are grown in this section, both in quality and beauty of appearance, and the yield of fruit is most remarkable in quantity.

It was on the invitation of Mr. C. W. Hartman and others of Clarksburg and vicinity that Mr. L. Woolverton, Secretary of the Ontario Fruit Growers' Association, and Professor H. L. Hutt, Horticulturist at the Ontario Agricultural College, Guelph, visited this section in order to locate a station for conducting experiments in plum growing.

Mr. Hartman very kindly engaged a carry-all, and, along with another gentleman, piloted Messrs. Hutt and Woolverton throughout this whole valley. Clarksburg is itself a small but prosperous town, founded many years ago by Mrs. Hartman's father, Mr. Marsh. It has waterworks, drawing its supply from the Beaver River, and shows other evidences of prosperity. According to Dun, Wiman's report, there is more wealth in this small town of seven hundred inhabitants than in any other town of its size in Ontario.

One of the most interesting fruit farms visited in this locality was that of Mr. John G. Mitchell, consisting of about fifty acres, of which fifteen are devoted to fruit; and the whole place is in a most excellent state of cultivation. The thrifty farmer is known by his fences, and those of Mr. Mitchell are quite models in this respect. The particular fruit for profit with him, as with most growers in this valley, is the plum, and the success attending his efforts was well shown by the immense loads of Coe's Golden Drop, Lombard, Glass etc., which were harvested from his trees.

Mr. Hartman showed the same success in his own orchard with plums, and not far away in the vicinity of Collingwood there are many other noted plum growers, and among them, Dr. G. M. Aylesworth, a well-known member of the Fruit Growers' Association, who ships a large quantity of this fruit, both northward as far as North Bay by rail and Sault Ste Marie by boat, and southward by express to Toronto and Montreal. Among all these growers a great deal of difficulty has been found in identifying varieties, owing to the frequent mistakes made by careless nurserymen in the propagation of trees, and to the frequent habit of substituting one variety for another when filling orders. Should a plum station be established in this vicinity, all varieties will be grown and little by little all misnamed varieties grown in the section will be identified.

Mr. Mitchell's apple orchard was also well worthy of attention. Here, as indeed all over this section, there is a good crop of apples, the best probably in the whole province, for the apple scab thus far has not become so prevalent in this northern section as it is in the southern districts. The local estimate of the crop is sixty per cent. of a full crop of apples; probably this means very near the average. So successfully is the apple cultivated in this section that a large *apple store house* has been erected near Thornbury by Messrs. Ingersoll & Hunt, where apples are stored in barrels and repacked for export just at such times during the winter season when they will bring the most money. The double wainscoted walls are filled with sawdust, and both on the outside and inside of this double wall air spaces are constructed. This house is cold in summer, and sufficiently warm in winter to preserve the fruit from freezing, without fire.

Some of the *principal varieties of apples* grown for market in this district are Ben Davis, Spy, King, Baldwin, Ribston Pippin, Fameuse, Cayuga Red Streak, St. Lawrence and Golden Sweet, but of all kinds the most productive is the Ben Davis. Some five year old trees of this variety in Mr. Mitchell's orchard are loaded to the very ground with fine, well-colored fruit, and this early and regular bearing seemed to be a marked characteristic of this variety.

Pears are not widely cultivated as yet in this section. Indeed, many of our varieties would probably be too tender this far north, but the *Flemish Beauty* which is hardy, succeeds admirably. Some trees of this variety in Mr. Mitchell's orchard produced fruit which was remarkably fine. One tree in particular, which was fifteen years planted, had produced four barrels of pears in

the season of 1890, from which he had cleared $15.55, and similar crops at other times had been harvested. The fruit this season is of a fine size and well colored, a special feature being the absence of scab which so destroys the Flemish Beauty in some sections.

The people of the Beaver Valley are alive to their own interests, and have vigorously enforced the black knot by-law during the last seven years, and this forethought has been worth thousands of dollars in this valley.

THE FALL CARE OF BERRY PLANTS.

INTER protection is an absolute necessity for growing small fruit successfully in a Northern climate. It should be practiced in every locality where the temperature reaches zero or below. With the high cultivation now practiced, a large and tender growth is stimulated, hence the greater necessity for maintaining as uniform a temperature as possible throughout the winter. Even in localities where plants show no injury, and among those considered most hardy, the quality is often affected and the succeeding crop very much reduced. The best winter protection for blackberries, raspberries and grapes consists in laying them down and covering lightly with dirt. All old canes and weak new growth should be cut out and burned soon after fruiting, leaving only strong, vigorous plants.

If plants have been well mulched in the summer with green clover, clean straw or coarse manure, as they should be, less dirt is required by using this mulching. In laying plants down (the rows running north and south) begin at the north end, remove the dirt from the north side of the hill about 4 in. deep; gather the branches in close form with a wide fork, raising it toward the top of the bush and press gently to the north, at the same time placing the foot firmly on the base of the hill and press hard toward the north. If the ground is hard or bushes old, a second man may use a potato fork instead of the foot, inserting the same deeply, close to the south side of the hill, and press over slowly, bending the bush in the root until nearly flat on the ground. The bush is then held down with a wide fork until properly covered.

The top of the succeeding hill should rest near the base of the preceding hill, thus making a continuous covering. This process is an important one, but easily acquired with a little practice. In the spring remove the dirt carefully with a fork and slowly raise the bush. With hardy varieties and in mild winters, sufficient protection may be had by laying down and covering the tips only. Grapes, being more flexible, are laid down without the removal of the dirt near the vine. There is no more important work on the fruit farm or garden than winter protection and there is no work more generally neglected. Let it be done thoroughly after frosts have come and before winter sets in.—M. A. THAYER, in Farm and Home.

THE DEMPSEY PEAR.

ON the occasion of our visit to the Trenton Apple and Pear Experiment Station, Mr. W. H. Dempsey pointed out to Prof. Hutt the original tree of the Dempsey pear. It was of good size and thrifty growth, but had been annually robbed of its young wood for propagating purposes. It was about twenty feet high and the trunk 6 or 7 inches in diameter. We brought with us a fine sample, which by measurement was 4 inches in length and 3¼ in thickness at its widest part. The pear at the time of writing is firm and good for keeping some time yet, thus

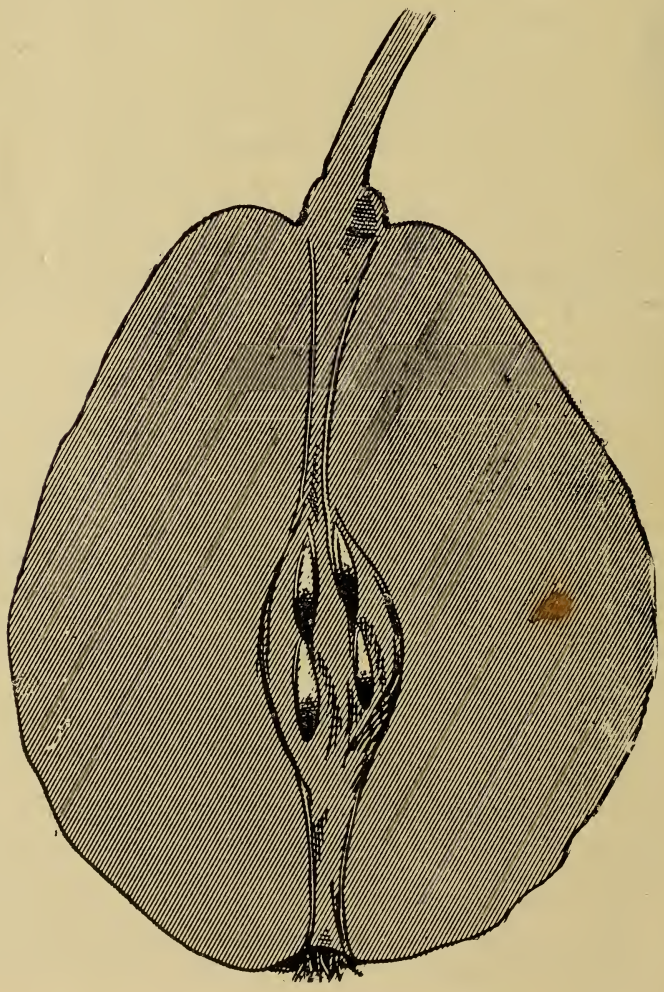

FIG. 704.—SECTION OF DEMPSEY PEAR.

covering an excellent season in the market, when the Bartlett is entirely cleaned out, unless kept in cold storage. It so much resembles Bartlett that it could be well sold for that pear, but its flesh is essentially different, though scarcely inferior.

The pear is the product of many experiments in hybridizing conducted by the late P. C. Dempsey, father of the present experimenter, and we are glad that so good a fruit bears his name. The accompanying cut being taken from an actual specimen gives an exact representation of a section of this pear. The tree was grown from a seed of the Bartlett and fertilized with the Duchess d'Angouleme. It is an upright, good grower; foliage large, glossy, dark green, resembling both parents.

Description.—Fruit large obtuse pyriform, irregular in outline. Skin smooth, green, changing to yellow as it ripens, with a slight brown tinge where exposed to the sun. Stem about an inch long, stout and set lightly to one side. Calyx shallow. Flesh white, fine grained, tender, buttery, almost melting, with a rich, sweet, delicious flavor. As a dessert or market pear it is of the highest merit. It will stand transportation to the most distant markets. Season, October and November.

THE TALMAN SWEET NOT A HARDY TREE IN ALL LOCALITIES.

EIGHT years ago I set out an orchard of 180 apple trees. About 20 of them died the first year. The nurserymen very cheerfully agreed to replace any that would die the first year, at half price, which they did, but the agent whom I dealt with, in replacing trees for the ones that died, sent me nothing but Talman Sweet and Stump. Now those Talman Sweet were set out promiscuously through the orchard and proved to be the only sickly trees in the whole lot, among 30 or 40 different varieties of apple trees.

They started off all right and did as well as any of the others for a few years, even bore fruit and matured it in good shape; but one or two of them dies every year. One of them was planted in the vegetable garden and was highly cultivated; it was making excellent growth. I got one apple off it last year, this spring it blighted and died. Out in the main orchard where they are not so well cultivated, there is the same result; they just die.

The Stump tree does very well here, but appears to be shy at bearing, so far. As for its fruit, I must say it is a very delicious apple; it would be hard to beat as a dessert apple. With me, its season is October.

Hope, B. C. W. A. STARRET.

JUDGING FRUITS BY POINTS.

THE Editor of the Waterloo Chronicle certainly makes some sensible remarks on fruit exhibits, in writing up the North Waterloo Exhibition, such as (1) his recommendation that no prize be offered for plants of varieties that are poor in quality, or unprofitable to grow; (2) that exhibitors should be made acquainted with some of the important points taken into consideration by judges, as retaining full stem, being of normal shape and color, freedom from blemish, etc.

There is no doubt that this would be accomplished, and at the same time the work of the judges made much more exact and uniform, if we could prepare scales of points, and score cards for the use of judges, which would also be seen and read by exhibitors.

Such a course would also prevent much haphazard work; much "jumping" at conclusions, and therefore it seems important that some steps should be taken toward more careful work on the part of our judges. Simply in the way of suggestion for future consideration, we propose the preparing of score cards for APPLES—with some such points as the following :—

For single plates.—Form, 10. Size, 10. Color, 10. Clearness, 20. Total number of marks, 50.

For collections—(a) for dessert; each variety, 10 marks, divided thus—Color, 3. Size, 1. Clearness, 4. Form, 2. To this add the standard value of each variety as given in the fruit catalogue published by the Ontario Fruit Growers' Association, for dessert, home and foreign market, and to the total add, say, a maximum of 10 marks for the way in which the varieties have been selected to cover the season.

(b) For cooking; each variety 10 marks, divided thus, Size, 3. Color, 1. Form, 2. Clearness, 2. Freedom from worms, 2. To this add the value, according to the above-mentioned catalogue for cooking, home market, and foreign market; and then to the total add 10 marks for the way in which the collections have been selected, with an eye to covering the greatest length of time.

We have said nothing about nomenclature, which is an all-important point, but of course every variety in a collection, which is wrongly named, should be ruled out of count entirely.

GRAPES.—Of course quite a different set of points must be observed in judging grapes from those observed in the case of apples. Mr. George T. Powell, of Ghent, N. Y., suggests the following schedule, viz., Flavor, 10 points. Size, 5. Color, 5. Symmetry, 5. Firmness, 5. Making a total of 30 points to represent a perfect fruit. This scale would apply to single plates. If collections were under consideration, these points would need to be grouped to make, say, 10 for perfection of its kind to each variety, and to the value thus attained, add its value as shown in our Grape Catalogue.

THE BEST TIME TO TRIM AN ORCHARD.

OMEBODY has said that the "best time to trim an orchard is when his saw is sharp." While this may sound smart and taking, the direction is misleading and very unsatisfactory; and the probability is that this man's orchard would be trimmed very often.

It is not a good time when the buds begin to swell, for the stump will not heal over readily, but will continue to bleed through the season and perhaps for years, and decay set in.

It is not a good time just as the tree comes into full bloom only to take off small limbs or suckers while standing on the ground, for then the sliver is forming under the bark, and standing on a limb or leaning a ladder against the tree with a man's weight on it, the bark wonld be badly bruised and torn.

On the whole, the best time, in my judgment, is between the time of gathering the fruit and hard freezing weather, so the stump will become seasoned before the sap starts in the spring. Sometimes a good opportunity occurs after the severe weather is over and the snow is still deep, with a good crust.

First, the time, then the how. A fine sharp saw is essential, and if it has a narrow point all the better; and, indeed, a compass saw is sometimes very convenient; but by no means use a saw with teeth on both sides, as some unwittingly advise, for many a limb would be badly cut.

That too much and hap-hazard sawing is done in orchards goes without saying—judgment and good common sense are needed here as really as in guiding the ship of state or in planning a military campaign. Limbs should be taken off close, and the stumps made smooth, using a sharp knife if needful It is a great eyesore to a sensitive man to see stumps cut at every conceivable angle; and one, two, three or six inches long. This unsightly appearance remains with little change from year to year. Nature, to be sure, is doing her best to hid the deformity, but the annual deposit of new wood is small and a long time must pass before the blemishes are overgrown. So then saw close and pare smooth, let the stumps season a few days and cover them with paint, or better, with thin shellac, and in a few years they will be covered with new bark. Dead limbs need to be cut out, for there is no beauty or profit in dead wood. As a rule the suckers should be taken out, only, perhaps, after taken out a large branch an open space is left, which can be filled by training in a sucker. When limbs cross, one, and sometimes more, should be removed, and when a limb menaces some other limb, if it cannot be taught by tying to mind its own business it had better be taken out. We often find tangles and bunches of parallel branches; these to be carefully thinned out, so as to make a clean, open systematic head; but not a hollow globe.

In taking off a limb of much size—say an inch or more in diameter, it is well either to saw the stump eight or ten inches long and then saw again, cutting

close, or to saw close, beginning on the under side, and sawing a little way, finishing it on the upper side. This keeps the bark from tearing, which makes an ugly wound. These remarks refer, of course, to full grown trees.

The time to begin trimming young trees is before they are set out. In digging, the roots are more or less shortened, and it is necessary to shorten the tops correspondingly. It is then the time to give right direction to the limbs, to take out feeble shoots, and to cut back part of the previous year's growth, taking care to cut just above the bud, which is the way the limb should grow.

In trimming grape vines that are taken down from the trellises, the cutting should be done so the stump will season before snow comes, or they will be liable to bleed all the next summer.—Green's Fruit Grower.

THE VALUE OF LEAVES.

EAVES are of value as a mulching material, as stock bedding and as a stable absorbent.

As a mulch, leaves possess the highest value. In the garden a light covering of leaves over the pansy or strawberry bed will do much to bring the plants through in an improved condition. In fact, all forms of vegetation come out in the spring greatly benefited if a light mulching material is spread about them in the fall. Leaves placed about plants in the fall shield them from the sun's burning rays during winter.

In the early spring, as the days become warmer, the constant freezing and thawing is prevented by the shade afforded. While serving the purpose of shade to the plants they become more or less packed about them because of rains and wind. In this condition decay sets in, and when warm spring arrives a good top dressing is on the soil's surface. If allowed to remain among strawberry plants the leaves aid greatly in keeping the fruit clean and of bright appearance. In the summer season, especially such a season as has been the past, the mulch prevents excessive evaporation from the soil.

As bedding material the value of leaves is well known, and as a stable absorbent their worth should not be overlooked. Placed in the stables, they will readily absorb three times their own weight, which fertilizing material they will hold tenaciously Thrown in the dung or compost heap they do not add a serious obstacle to rapid removal of the pile in spring, but tend to form a heap easily worked and at the same time adding their own decay to the compost pile.

While the extensive gathering leaves for the stable can hardly be recommended, yet as a mulch to the fruit, vegetable and flower garden their value should not be under estimated.—New England Homestead.

PEACH YELLOWS.

BULLETIN No. 17 of the United States Department of Agriculture publishes much valuable information about peach yellows. In regard to preventive measures the bulletin says :

"With our present knowledge the cure of peach yellows appears to be impossible. Many reported cures have been investigated and found without merit. The claims made in behalf of some of these were manifestly with intent to deceive ; in other cases they were made in ignorance of the symptoms of the disease and of what constitutes a cure, and generally by people not familiar with peach growing. Faithful trial has been made of various fertilizers containing important plant foods. With some of these, especially caustic lime and fertilizers containing nitrogen, it has been possible to make diseased trees put on a greener and more vigorous growth, sometimes mistaken for recovery, but all such trees have continued to show symptoms of the disease and have soon relapsed into feeble growth.

"So far, therefore, as we know, the only thing which can be done is to cut out and destroy all trees as soon as any of the signs have made their appearance. It is best to burn the diseased trees—roots and all, if possible.

"In confirmation of this belief in axe and fire, we have the experience of the Michigan peach growers. In some localities, notably at South Haven, they have been fighting the disease in this way for the last twenty years, and though the extermination of affected trees has not been complete, the results have been of such a nature as to lead the growers to believe that this annual weeding out has saved the orchards.

"The results of the rooting-out process obtained in other States than Michigan are less striking, either because the laws have not been enforced very generally, or because they have been in operation only a short time.

"The greatest difficulty in the way of enforcing a law of this kind is the desire on the part of owners to market fruit from affected trees. This opposition disappears as soon as it is made a misdemeanor to sell such fruit or buy it for sale, and consequently a clause of this kind should form part of every "yellows" law. Provision should also be made in such laws for the destruction of diseased trees occurring in waste places and in villages and cities. It is important also that records should be kept each year of the number of trees examined and the number destroyed, so that in the future there may be a sounder basis for judgment as to the efficacy of the law."—New England Farmer.

LITTLE ETHEL : "What is it these anarchists people talk about?" Little Johnny : "Why, they wants everything everybody else has got, an' they never wash themselves." Little Ethel : "Oh, I see. They is little boys growed up." —Washington Magazine.

ORCHARDING ON CHEAP GROUNDS.

WHAT to do with the land that will not bring more than $5 to $15 per acre has been a problem with many farmers, for generally such land is almost worthless for most crops. Located upon hillsides, or in exposed places where the soil is poor, there seems to be no use or demand for it. But in the last quarter of a century a great deal of the land in the northern belt of states has been turned into apple orchards, which have been paying from $15 to $75 per acre annually—a profit that would be considered satisfactory by any farmer. The orchards have been well taken care of, and have demonstrated what can be done. Instead of allowing the land to remain idle, the owners planted the orchards of trees on them, and then carefully cultivated them. To day the land is worth considerably more than at the beginning.

The only drawback to planting orchards on such land is that one has to wait so long for returns, but the orchards should be planted simply upon the principle that as we grow older the farm is becoming more valuable, even though we personally never receive the benefit. It is another way of laying up money for our children. The armies of worms and insects that attack the orchards are frightening many indolent farmers out of the business. They declare that there is no money in the work, and in so doing the insects are doing a good turn to the careful, painstaking growers. The time is rapidly coming when only the careful and well-posted will make money in orcharding, and while others fail they will receive the benefits of markets only half supplied with the fruits. Destructive insects and diseases are even now keeping down the supply of apples, so that the markets are rarely over-supplied. But those who study the latest methods of destroying the borer, codling moth, apple maggot, apple scab, and other foes, will be sure to make orcharding pay more than if these insects had never existed. Those who do this work successfully will always be in the minority, and while the great number will be decrying the failure of the whole business, the few progressive ones will be making good incomes.

The trees on poor soil need more training than those on rich. Enrich the earth around the trees, and they will get established. Barnyard manure is undoubtedly the best for this, and where it is abundant do not be deceived into buying any prepared mixture. Allow poultry, sheep and swine to fertilize the orchards by roaming at large in them. They open the soil, let in the air and sunlight, fertilize the trees, and destroy the insects By turning the orchards into poultry ranges you will add quite a little to the income from the eggs and fresh chickens supplied for the table or market.

Train the trees young. The best authorities say that only the pocket knife should be used for training and pruning apple trees. This is only another way of saying that the pruning should be done early, before the branches have

attained any great growth. Discover whether the limbs need to be cut off before they have reached the size of the arm. Prune the young trees so that they will form an even head, giving the heaviest amount of shade on the south side, to shield from the hot sun. Use a colored glass with a magnifying power to discover the insects on the limbs in broad daylight, and then clip off the twigs with the eggs or nests on them to burn.—S. W. CHAMBERS in Germantown Telegram.

ARCH-GRAFTING.

While paying a visit to the apiary of Mr. Post, of Murray, Ont., my attention was directed to some fine Ben Davis trees seventeen years planted, which were very large and thrifty, and heavily loaded; but all possibility of splitting under their weight of fruit was precluded by a system of arch-grafting, which operation had been performed on the trees while young. Wherever the tree

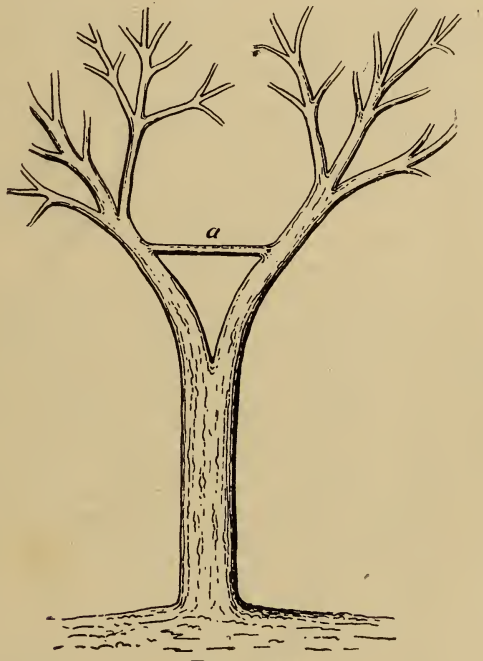

FIG. 705.

had a fork a branch from each side of the tree was bent together and tied or grafted, when they soon grew into one body as shown in the illustration (*a*), holding the two parts of the tree as firmly together as though they had never separated.

From my observation I am convinced that by thus attending to young trees very many might be saved which would otherwise split and be destroyed when they came to bear a full load of fruit.

Chisholm, Ont. WM. B. LEVEANS.

ATTEMPTS AT ACCLIMATION.

FREQUENTLY in the pages of the CANADIAN HORTICULTURIST, there have appeared articles advocating Darwin's theory of the acclimation of plants and trees, by growing them for several generations in climates to which they were not adapted. Some claim that the apple, or peach, can be made more hardy by growing it from seed, for countless generations farther and farther north; and many attempts to carry out this theory into some practical issue, are being made. Prof. Bastin, in his "Botany," goes so far as to state that all plants and animals come of one common stock, viz., from "a mass of undifferentiated protoplasm," whatever that may signify. But it appears to be an unproven position, although very plausible in theory.

The Country Gentleman gives a synopsis of an address by Josiah Hoopes, before the Nurserymen's Convention, on this subject, which may be of interest to our readers. He says, that he instituted a series of tests with different varieties of the peach, the trees having been procured from widely different latitudes, ranging from the Gulf States to the extreme North. They were planted side by side, the culture given them was precisely alike, and all controlling influences were similar. But in after years there was not the least perceptible difference in hardiness, or in the character or ripening of the crops.

The many attempts which have been made to render half tender plants, trees and fruits hardier, have nearly all proved partial or entire failures. Illustrations occur in the case of common vegetables. The Indian corn plant is not changed in hardiness by millions of plantings or endlessly diverse treatment. The first white frost in autumn cuts it. A slight apparent difference, however, should not be overlooked. The small northern varieties complete their growth sooner than the large southern sorts, which continue late in a more succulent condition, and show some difference in the amount of harm which a frost does to them; but the character of the plant is not changed, and there will be no difference whatever when both are equally mature. The potato and the tomato are always killed by the first white autumnal frost, and no horticulturist has been skillful enough to raise a frost-proof potato.

The fact that trees and shrubs which ripen their growing wood are hardier, and will endure the cold of succeeding winters better, than those of late succulent growth, may be taken advantage of by preventing late growth. A half-tender grape vine, planted on a well-drained and rather poor soil, will endure the winter better than the same vine growing late in wet and very rich ground. But no change whatever is effected in the character of the variety, for let the two vines change places, and they will change in growth.

The propagation of varieties from seed sometimes, however, causes a slight difference in inherent hardiness. Among apples, for example, the Fameuse and

St. Lawrence are hardier sorts than Baldwin and Rhode Island Greening; and the Flemish Beauty and Urbaniste pears are hardier than the Bosc and Bartlett; but these differences are very slight when compared with the endurance of an oak or a rock maple. The peculiar characteristics of the apple and pear are not changed.

When we come to the continued propagation of the same variety by cuttings, budding or grafting, no permanent change whatever can be effected. The Baldwin apple remains the same Baldwin, and the Bartlett the same pear, after an endless succession of trees have been propagated. A slight temporary difference may be effected in individual trees by promoting early ripening of the wood, or prolonging soft growth.

The apple and pear show more difference in their many varieties than most other species of vegetable growth, partly on account of the great multitudes which have been propagated by seed. On the other hand, the many varieties of the peach vary scarcely a particle in the degree of hardiness which they have been found to possess. As with other trees, the early and late maturity of the wood have a slight influence on the endurance of the trees in winter, but we have never been able to discover the least difference which an early or late growth made with the fruit buds. A certain degree of cold—averaging about 12° below zero—has always destroyed their vitality alike on rank or feeble growers, on well-ripened or succulent shoots.

A Cure for Red Spider.—Since I learned, after a number of experiments, an easy and effective plan to be rid of the red spider, I will give it for the benefit of those who may have plants injured by his visits. First, shower the plant all over thoroughly with dry insect powder—don't be afraid of putting on too much. Let it remain about twenty-four hours. Second, plunge the plant, pot, earth and all in a tub of water, and let it remain there over night; in the morning, gently wash the plant while under water, lift it and set it in the sunshine to dry. The water needs to be of a temperature a little tepid or the plant will be chilled. The fingers can be run through the leaves while under water without any injury. The plant may lose a few leaves in the process, and these chiefly because of the previous injury done to them by the spider; but I have removed the spider utterly by one application of this treatment, even when they were very numerous, and had the plants rather improved by their bath than otherwise. As for the flat, white mealy bug that damages all plants that he visits, I have found no means for removing him, excepting to rub him out of existence with a small damp brush. These two are the worst of all enemies to house plants —Vick's Magazine.

VEGETABLES are backward, but the tomatoes will ketchup.—Philadelphia Record.

ITEMS.

PEOPLE who enjoy the happy luxury of working on the land in the open air, may well be contented with their lot as viewed from a standpoint of health and pure enjoyment, if they compare their condition with the large majority of those who are confined in rooms where the percentage of pure air is very moderate, and the muscular effort required to till the soil is so conducive to the enjoyment of food and rest, and the absence of bustle and anxiety so promotive of thoughtfulness and meditation, that to call it a *luxury* to work in the open air, is by no means a misnomer.

Especially is this true when labor is connected with intelligence and a degree of management to prevent one's labor from degenerating into a slavish routine of mere manual effort. A man with a thinking head on his shoulders, must have *some* brain interest in what he is doing, or his physical plodding will wax irksome, and if he is of a poetic, sentimental, or a religious turn of mind, he must see something in his employment to respond to the yearnings of his peculiar temperament, and it is safe to say that in the management of a piece of land, if not too small, there is ample scope in coming in contact with Dame Nature and her many conferred favors, to interest the tastes and desires of the most unmovable, if he has any degree of appreciation whatever. Only do not let money-making be the ruling motive, desirable as that may be, but health, contentment, love of Nature, and a field for the enjoyment of a meditative spirit which is always a source of rich occupation of time, for

> **" A soul without reflection, like a pile**
> **Without inhabitant, to ruin runs."**

Well, coming down to more practical or temporal details in one's experience, let me say to those who are trying to garden on a piece of flat rich land, that to get rid of the surplus water in the most profitable way, is much to be desired. In raising strawberries, I have tried moulding up ridges 3½ feet apart and setting a single row on each to allow the water to settle between the rows as the snow melts off in the spring, to prevent freezing around the plants, which, if allowed, is apt to prove certain destruction, in most cases. This year I am ridging up nine or ten feet wide, and putting three rows on a ridge, and think it will prove as effective as drainage, as the other way, and the rows be more easily cultivated. As to varieties, I have found the Williams the best *all round* berry of any I have tried, and if I were to be shut up to two varieties and forced to plant no other, I would choose the Crescent and Williams, considering *all* things. Of course my experience has not run over 28 varieties, so my opinion is not worth as much as some others. Raspberries with us this year were next door to a failure, not one-third as much of a crop as the year previous; freezing down to the snow line being the cause, as we do not bury down for protection.

Speaking of freezing reminds me of the way I put in ice last winter, and the hint may prove serviceable to some the coming winter. To those who only use a moderately small quantity, the best way is to make a tight bin of boards, well stayed with studding, in a place where protection of sawdust can be piled up around of two feet or so in thickness; fill in with water into the bin a foot or so each night during the freezing weather until the required amount is frozen, and then take away the bin and protect well with sawdust. This plan will keep one in ice the season through, when the same amount, saved in blocks cut from the lakes or rivers, would not hold out much longer than half the summer.

Nepean. L. FOOTE.

THE APPLE EXPORT TRADE.

Surprise is sometimes expressed at the wide range in the prices for apples cabled from the English markets. The reason is not far to seek. A cablegram to hand this week read :—"Fruit importers say Canadian shippers of apples should exercise more care in packing. Many barrels were much depreciated in value on account of carelessness in this respect." Canadians might easily secure 25 per cent. more for much of their fruit sent from here than they now receive. The trouble is in the handling and packing of the apples. The prospects for Canadian apples in England are brighter. A recent report from London says : "We believe the bulk of the English apples will be on the market during the present month; in fact, already a scarcity is felt, and apples are selling at higher prices now than they have been for some years in the month of September. Continental supplies are getting exhausted, and our opinion is that most of the apples on the continent will, as in our own case, be on the market during the present month, with the exception of the south of France. This is a thing that has not occurred before for many years, and we shall now have to look to the States, Canada and Nova Scotia for our supplies during the remainder of the season."

Another London firm writes :—"Now what is the outlook for this season as compared to 1891-'92? In that year we had a third of a crop of apples in England; France had double the quantity she has this year, and the same may be said of Holland and Germany. This year, as stated in our report, issued in July, England has the worst crop of apples known for twenty years. At the present time the London market is in want of American apples, which is just one month earlier than she has ever had American apples here before. We have seldom wanted American apples here before the middle of October; in fact, they have hitherto always done better in London towards the end of October than earlier. Freights are now the lowest they have ever been within the writer's recollection. We hear of 1s. 6d. freight from Boston, and 2s. from Montreal; and from New York the freight will not be more than 2s. 6d. to 3s. per barrel. This is nearly 2s. per barrel less than it has been for years, and we do not think any important rise is coming."—The Globe.

Novelties

The Columbus Gooseberry.—Through the kindness of Messrs. Ellwanger & Barry, we give an engraving of a new American seedling gooseberry, said to be of the English type. We can say nothing definitely as yet concerning the value of this variety, for it has not yet been tested, even at the fruit experiment stations of New York or Michigan. The introducers say that it is of large size, oval in form, skin greenish yellow, smooth, of the finest quality. They also describe the plant as a strong robust grower, with large spines, and large, glossy foliage which has not yet shown any trace of mildew.

Fig. 706.—The Columbus Gooseberry.

THE CYCLAMEN.

IN our opinion the Cyclamen Persicum is one of the most useful and beautiful winter flowering plants grown. It flowers freely, lasts a long time in bloom, makes a good table plant, with great variety of color, and is often very sweet-scented ; in fact the plant has so much to recommend it that it is surprising it is so little grown here. I am sure that if private gardeners as well as florists were to give it a fair trial they would find themselves well repaid for their trouble. We think the chief reason why this plant is so seldom seen here in any quantity is that gardeners are under the impression it is such a difficult plant to grow in this country. I think this a mistake, and that if the mode of treatment given below were followed, and the same attention given them that is required to grow any ordinary plant well, that idea would be soon got rid of.

The seed should be sown in November in a shallow pan or box in light porous soil, in a temperature of about 55 degrees ; as soon as large enough to handle prick off into boxes and place near the glass. After remaining a short time in this way they may be potted into three inch pots and shifted on into 5 or 6 inch flowering pots as they require it, which will probably be in August. Rich, light, fibrous loam, with a little sharp sand and leaf soil, or well-rotted manure is the best compost to use, never use fresh rank manure. Keep them growing right along till they flower, without any check whatever. The old plan of resting them, by drying off before flowering at all, is almost entirely out of practice.

The Cyclamen may be kept outside in as cool a position as possible plunged in coal ashes and a sash over them to keep off heavy rains and hot sun if necessary, this is of course during the hot summer months. Take them in about the middle of September. I believe it is the custom in England to keep the Cyclamen very cool during its flowering season, but we have found its flowers come finer and better in rather a warm house.

The Cyclamen has several enemies including green fly, thrip and red spider ; these must be kept down as they soon do great damage. The green fly particularly will attack the young leaves and buds as soon as they break from the bulb, and cause them to come deformed. The best thing to get rid of them is tobacco dust.

A little weak guano water occasionally will help the Cyclamen, but don't over-do it. We have tried to flower them on benches, but would not like to recommend that plan until after further trial.

The Cyclamen may be grown the second year or longer by drying it off after flowering, but we prefer young year old plants.—Report Montreal Horticultural Society.

HOW TO BUILD A SMALL CONSERVATORY.

[We have frequent enquiries regarding the building of small conservatories, attached to houses. Possibly this plan, which appeared in Gardening last month may be useful to some of our readers.]

THE drawings here presented show a small conservatory suitable to be attached to a private house. The dining and drawing rooms of many houses are about 15 feet wide, have a chimney in the center with windows on either side of same. This conservatory erected in conjunction with either of these rooms would be an artistic and serviceable addition. The windows could be altered to doorways with or without doors as desired. A foundation built of the same material as that of the dwelling with stone footings carried below the frost line should be prepared for the conservatory, or if this be too expensive, locust posts could be used instead. If posts are used the tops must be squared, and the proper angle given to those which form the corner of the octagon. German siding could be nailed to posts, the board at the grade line extending below the level two or three inches.

By consulting the scale details in conjunction with the following description you will, we think, understand the method employed in the construction of this building.

A sill 2 inches by 6 caps the foundations and should be laid in a thin bed of cement. Floor beams 2 by 10 inches secured to the sill and supported at the house on a 2 x 4 secured to dwelling, should be laid the 11 foot way of conserva-

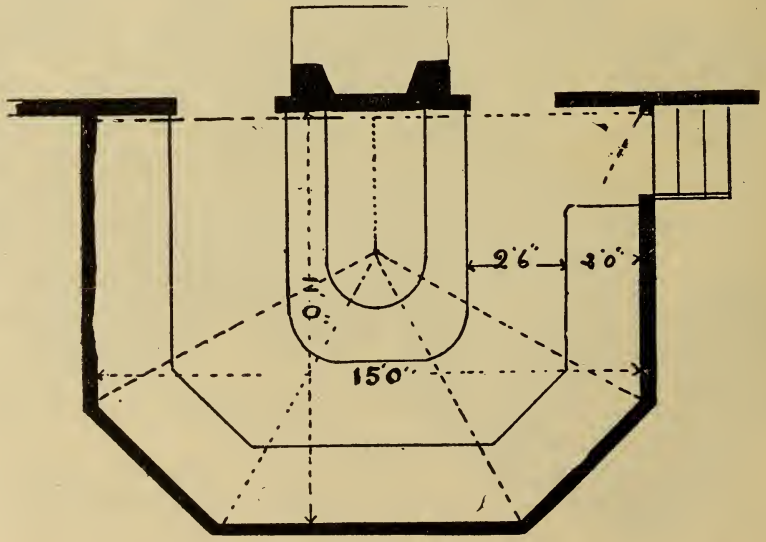

FIG. 707.—GROUND PLAN.

tory. A plate 2 x 4 inches is next fastened to the top of the floor beams, following the outlines of conservatory same as sill. To this plate the rafter feet are secured by cast iron lugs bolted to the plate and rafter feet. It will be noticed that this plate extends outside of the conservatory forming a cap for the base, and constructed in such a way that it is impossible for water to find its way into the joints. The height of the sides as well as the length of the rafters can only be determined by the room available, position of the windows in the second story, etc. This must all be carefully noted before operations are commenced and a large scale or full sized drawing made to determine these points. The

FIG. 708.—SIDE ELEVATION.

rafter feet and rafters are joined together with a wooden bracket, as shown, and securely bolted to each. The elevations and dotted lines on plan show the number and position of the rafters. Where the rafters join at the ridge they should be secured to the same with iron straps.

The sides of the conservatory from the top of the floor to the height of 2 feet 6 inches are panels running between rafters and secured to the same. A sash sill caps the panels, and above this are the side sash 1¾ inches thick, hinged at the top to facia and provided with iron straps to open them. The facia, 1⅞ inches thick, runs from rafter to rafter in one continuous piece. The

rafter feet should be cut away where the facia strikes them so that the face of the rafter foot and facia are on the same plane. The gutter is constructed in two pieces lined with tin and supported by brackets as shown. Care must be taken that the tin laps over the outside face of the gutter and extends close to the facia cap, as otherwise water will surely find its way into the conservatory. The roof is formed by rafters and sash bars, the bars being gained into the facia cap and mitred against the rafters. The position of these can be readily seen on elevations.

Either side of the short ridge are small sash for ventilation hung to the ridge and are intended to open by means of ventilating machinery, which can be procured for a small sum, of dealers in the same.

The tables can be built of wood, they should be strong and substantial with a band on the front projecting about two inches above the table.

The Best House Plants.—When looking around for the best kinds to stock up with, it will be well to have before us the answer which Mr. B. F. Critchell gave to the question of the 12 best window plants, at the recent florists' convention in Boston. He named Aspidistra lurida variegata—a Liliaceous plant from Eastern Asia, having oblong lanceolate leaves—easily grown in an ordinary window garden ; small posts should be used. Azaleas of the Indian or Chinese classes continue to increase in beauty with each season's growth. Callas—few plants exceed these in popular estimation. Of Palms, a number were named as being very suitable for house decoration. Dracena, or Cordyline terminalis and indivisa are tropical plants of rare beauty, the attractiveness lying in the leaves, which vary in color from green to light crimson. The southern Palm (*Corpyha Australis* or more properly, *Livistonia Australis*) is a very ornamental plant from Eastern Australia, for window decoration. The Chinese Fan Palm (*Livistonia Chinensis*) is perhaps of all the Palms the most desirable, because being so easily suited to treatment. Kentia (or *Howea*) *Belmoreana* and *Forsteriana* are also Palms of great value. The India Rubber Plant (*Ficus elastica*) is one of the most ornamental and widely grown plants, being one that endures the dry dusty atmosphere of dwelling-houses exceedingly well, because of its leathery leaves. There is a golden variegated form that is very fine, being equally as well suited for house culture. Among Ferns for house culture, the Shaking Fern (*Pteris tremula*) is of the best ; grows very rapidly, soon having handsome specimens. The small Sword-Fern (*Nephrolepis Duffi*) is an elegant miniature variety of the old but popular Sword-Fern that commends itself to all by its easy culture and graceful appearance. Any first-class florist should be able to supply most of the above.

MR. WATSON'S MOTH.—Mr. J. Alston Moffat, London, writes he has no doubt the moth described by Mr. Watson, on page 371, is Amphion nessus *Cram.*

SHRUBBERIES.

OUR Canadian country homes are many of them deficient in yard adornment. Too little attention is given to that most important feature, a beautiful smooth shaven lawn, which is able to give a charm even to the most ordinary farm house. Indeed, the yard adornment is more important than the architecture of the house; if one has some grand old elms, maples and spruces, with some clumps of shrubs, so arranged as to hide boundaries, and objectionable features, and to shade the part of the lawn required for use in the sunny afternoons, the home will have an attraction that nothing else can give it. The plain old fashioned house itself need not trouble the owner, if, for want of means, he cannot replace it with a more expensive one. He can plant about it shrubs to hide part of the foundation walls, and the Japan Ivy, or the Virginia Creeper, to climb up the bare sides, and give his chief attention to planning a beautiful and attractive yard.

Aside from the lawn itself, it is often interesting to have on one side, a plot of ground, devoted to flowers and shrubs of various kinds. A writer in Popular Gardening, wrote some time ago, of such a collection, in the following terms :— The shrubbery walk at Lyndale was never more satisfactory than this year. To your recent readers let me explain that this is simply a portion of the outskirts of our rear lawn, so planted with two irregular lines of shrubs as to leave a gracefully curved grass walk of varying width between the continuous masses of shrubs. The bushes are seated on the grass at about three feet apart for dwarf growers, and from this up to eight feet apart for the larger ones, the latter being in the background.

The reasons why this walk satisfies me so well are : First it cost no great price, the shrubs having been bought mostly at from $3 to $5 per dozen, and I planted them myself. Then the selection embraces such a variety as to leave scarcely a week from April until November without some flowers, while to count the handsome berries of some, and the rich autumn foliage of others, and then some evergreens for winter, the walk is never without attraction.

Last of all, there is something so distinct about a shrubbery walk from other garden features. Here are verdure and size of growth that give character to the garden only second to a grove of trees; flowers that in beauty, fragrance and quantity almost equal the flower borders themselves, while the care of all amounts to almost nothing, embracing but the annual pruning and the winter protection of some of the more tender kinds.

DURABILITY OF TIMBER.

THE Commissioner of Agriculture, Washington, D.C., through the Chief of the Forestry Division, in relation to the treatment of timber in a late bulletin says :

With proper after-treatment of the wood the time of felling seems not to effect its durability. Early winter felling [December] should have the preference, because less fermentable sap is then in the trees, and the timber will season with less care, more slowly and more evenly, and before the temperature is warm enough for fermentation to set in. If the wood is cut "in the sap" it is more liable to fermentation and to the attacks of insects, and more care is necessary in seasoning ; for the rapid seasoning, due to the warm dry atmosphere, produces an outer seasoned coat which envelopes an unseasoned interior liable to decay. When cut in the leaf it is advantageous to let the trees lie full length until the leaves are thoroughly withered (two or three weeks), before cutting to size. With conifers this is good practice, at any season, and if it can be done, all winter-felled trees should be left lying to leaf out in spring, by which most of the sap is worked out and evaporated.

Always remove the bark from felled timber to aid seasoning—but not from the standing tree.

Never allow the log to lie directly on the moist soil.

If winter-felled, shape the timber to size within two weeks after felling and leave it placed on blocks—not upon the soil—in the forest, or if shaped at home place in a dry, airy—not windy—position away from sun and rain.

If dried too rapidly, wood warps and splits, the cracks collect water and the timber is then easily attacked and destroyed by rot.

With large logs, checking may be prevented by coating the ends with some fatty or oily substance mixed with brick dust, or covering with a piece of linen, cloth, or even paper, or by simply shading them to lesson evaporation ; cracks on the sides may be filled in with tow or cotton.

When piling timber, place laths or sticks of uniform size at uniform distances under each log, or post, or tie.

Sufficiently thorough seasoning for most purposes is obtained in twelve to eighteen months, while for special work, according to the size, from two to ten years is required.

The best method of obtaining proper seasoning without costly apparatus in shorter time, is to immerse the prepared timber in water, from one to three weeks, to dissolve the fermentable matter nearest the surface. This is best done by running water—if such is not at hand, a bath may be substituted, the water

of which needs frequent change. Timber so treated, like raft-timber, will season more quickly and is known to be more durable.

If practicable the application of boiling water or steam is an advantage in leaching out the sap.

Never apply paint or any other coating to green or unseasoned timber.

If the wood was not well dried or seasoned, the coat will only hasten decay.

Good coatings consist of oily or resinous substances which make a smooth coat, capable of being uniformly applied ; they must cover every part, must not crack, and possess a certain amount of plasticity after drying.

Coal tar, with or without sand or plaster or pitch, especially if mixed with oil of turpentine and applied hot (thus penetrating more deeply), answers best. A mixture of three parts coal-tar and one part clean, unsalted grease, to prevent the tar from drying until it has had time to fill the minute pores, is recommended. One barrel of coal tar will cover 300 posts. Wood tar is not serviceable because it does not dry.

Oil paints are next in value. Boiled linseed oil or any other drying vegetable—not animal—oils, are used with lead or any other body (like pulverized charcoal) to give substance. Immersion in crude petroleum is also recommended.

Charring of those parts which come into contact with the ground can be considered only as an imperfect preservative, unless a considerable layer of charcoal is formed, and if it is not carefully done, the effect is often detrimental, as the process both weakens the timber and produces cracks, thus exposing the interior to ferments.—Farm, Field and Stockman.

HORTICULTURAL INSTITUTES.

The writer has frequently pressed the importance of Horticultural Institutes, conducted much in the same manner as the usual Farmers' Institutes are, but wholly devoted to the discussion of topics connected with the garden and the orchard. The directors of our Association have each expressed their willingness to help forward such meetings, to attend and speak on the growing of fruits or vegetables, and thus distribute more widely the information received by their years of attendance at the meetings of our Association.

Little, however, has as yet been accomplished in this direction for want of organized effort. There is needed a local society to arrange for the meetings, and this is the very thing we are just now trying to encourage. Such societies may draw, from the Electoral District Grant, a liberal sum, which may be spent in the purchase of books and journals for distribution, and for providing for lectures on garden and orchard topics, etc. Each of the members of this society may also be members of the Ontario Fruit Growers' Association for the one fee which makes them members of their own society. Full details will be given anyone who writes to this office, asking for them. Or in places where such a society does not exist, possibly our Director of Farmers' Institutes would arrange for the holding of Horticultural Institutes in place of the usual meeting devoted to a variety of agricultural subjects.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

A LARGE QUINCE was grown by Mr. Charles Vanduzer, Grimsby. It measured twelve inches in circumference. The variety was the Orange. Quinces have colored unusually well this season, and are free from scab. The last were harvested at Maplehurst October 15th.

WE USUALLY MARKET the quince in the twelve-quart basket; because purchasers usually want only small quantities. The market needs cultivating for this fruit, because in many places people seem scarcely to know what use to make of it. Quince preserves, marmalade, jelly, pickles, also quinces canned or baked, are all rich delicacies.

A PECULIAR BUNCH OF GRAPES was shown us by Major Allan, Grimsby. There seemed to be two distinct varieties in the same bunch, one the Niagara, the other the Lindley—white and red grapes with distinct flavor. Only one branch of the vine produced this peculiarity.

OUR EXPERIMENTAL VINEYARD of eighty varieties, at Maplehurst, is a great attraction. Of the white grapes *Victoria*, one of Miner's seedlings, is one of the most showy, it might be called a white Concord; *El Dorado* is of remarkably good quality, and very fine; *Pocklington*, well ripened, at this season is very fine, much superior in quality to *Niagara*. This last is a wonderful grower, and producer of immense clusters. The pulp separates easily from the seeds, and the abundant juice is very refreshing and pleasant when well ripened; but let the eater be careful not to eat Salem, or Lindley just before he begins with Niagara, or he will vote the latter insipid.

Of red grapes, *Lindley* is our favorite for general purposes. It colors early, is fairly productive, and of good quality. *Salem* is richer in flavor, and fine for winter use, as is also the *Vergennes*, which is also a very fine grape. *Woodruff Red* is a magnificent looking grape, so large and well colored, but inferior to either of the former in quality.

Of black grapes we cannot yet select any in preference to *Concord*, for general purposes. The bunches this year were immense and the berries very large. It produces in the Niagara District from three to four tons per acre. The *Wilder* is far superior in quality, but, so far, is comparatively unproductive. Mr. T. P. Carpenter, of Winona, however, has had different experience. His Wilders have produced about equal to Concords. He gives this variety no fertilizer. The *Worden*, though a little earlier, does not equal the Concord in productiveness, it does not carry as well, and has an unpleasant flavor if it hangs too long, while the Concord grows sweeter the longer it hangs on the vines.

THE *Victoria* above mentioned is one of 1,500 seedlings, mostly white, grown by Mr. T. B. Miner, in Central New York. The berries are large and of waxy lustre, with thick bloom, and quality fair. We will describe it more fully after growing it one more year. This white grape and *Woodruff Red* present a superb appearance together in a basket, or on the dessert dish. The latter is the most beautiful red grape we know of. It is a Labrusca, originating with C. H. Woodruff, Ann Arbor, Mich., in 1874. At Maplehurst it is very productive, and the magnificent berries have taken on a bright rich carmine (Oct. 12th).

TWO COLORS OF GRAPES ON ONE BUNCH.—Mr. L. F. Selleck, of Morrisburg, sent us (Sept. 28th) a bunch of grapes with two distinct colors; one half the bunch black and the other half red grapes. He asks if the freak can be propagated. On examination we found the stem was ringed, or dead, in the middle of the bunch, causing this curious appearance. The grapes were black and of good quality up to this ring, and beyond were red and insipid, because the sap from the leaves could not circulate into them to ripen them. Of course this could not be propagated.

THE EFFECTS OF RINGING were never so marked as in the instance of a vine at Maplehurst of the Goethe, or Rogers, No. 1. This variety seldom ripens in Canada, and just now (Sept. 29th) is quite green both in appearance and in flavor, but in passing it we were surprised to notice the branch loaded with brilliant red grapes of high quality, apparently quite another kind. On examination it proved to be a branch that had been ringed with a wire, and in consequence the berries on it were ripened far in advance of the others. This is the opposite of the effect of the ringed stem of a bunch above referred to, because this latter has no leaves to elaborate the sap.

Question Drawer.

Wash for the Peach Tree Borer.

An inquiry was received some time ago with regard to the composition of Mr. Hillborn's wash to destroy the peach tree borer, because as first published it was indefinite. The following is his recipe:—One bushel each of fresh lime and hardwood ashes, with enough water to make a good whitewash. This will require thirty or forty gallons. To this mixture add one pint of crude carbolic acid. Mr. Hillborn says, "I remove the soil from the base of the trees and apply the wash with a brush, as near the roots as possible, extending up one or two feet This should be applied during the last of May, and completed early in June."

Spraying Pump.

680. Sir,—Would you be kind enough to tell me where I can get a good spraying pump, and what nozzle to use? I have sent to Montreal, Toronto and Boston for the McGowan nozzle, but no one seemed to have it.

Edward Bayfield, *Charlottetown, Ont.*

There are few really satisfactory spraying pumps manufactured in Canada, and, as a rule, we have found it necessary to import from the United States our first-class pumps. The one which has been advertised in our journal, first under the names of Little Dandy, and later, as the Ideal, which is now being made in Brantford, comes closer to our requirements of any manufactured in Canada, so far as we know. If the manufacturers will remedy some little faults in it, which can be done without much trouble, we would be able to highly recommend this pump. It is not so expensive as American pumps, and works quite satisfactorily indeed. The McGowan nozzle can be purchased from Mr. W. H. Bunting, of St. Catharines, Ont. The price is $2.25, but these nozzles do excellent work. For a small hand pump write Mr. W. E. Saunders, London.

Apples for Leeds County.

681. Sir,—I have a couple of farms, which I lease out, and I have been thinking of planting an apple orchard on one or both. I only want one or two varieties, and these winter fruits. Some admire Spy, some the King, some McIntosh Red, some the Ontario. I hear good and bad accounts of each. How many trees should I plant to the acre?

J. R. Dargavel, *Elgin.*

In our opinion the Ontario would be the best apple for the County of Leeds, of the four mentioned by our correspondent. The *Spy* is one of the very best apples in quality, but a little tender; the *King*, also ranks among the highest flavored apples, but is a wretchedly poor producer of fruit; the McIntosh Red is a beautiful dessert apple, but inclined to spot; while the Ontario does not spot, is very productive, and, being quite hardy in South Hastings

would probably be quite so in Leeds. However, our District Fruit list, as published in our reports, recommends neither of these four, but only Golden Russet, Pewaukee, La Rue, Ben Davis and Red Canada.

In Leeds County, probably apple trees of most varieties could be planted 30 feet apart each way, and at this distance fifty trees would be required per acre.

Powdery Mildew on Raspberry Leaves.

682. SIR,—We have about one acre of Turner raspberries, that in the early part of the season were affected with a sort of mildew, and which greatly decreased the yield. Since fruiting, the young canes have died back from 6 to 8 inches and is still creeping downward, while some of the more tender canes are completely dead. Enclosed you will find some leaves taken from the canes of this last spring's planting. What is the trouble, and can anything be done to prevent it? Rows are planted north and south, and are exposed to the full heat of the sun. Is this the right way to plant?

WILLIAM DOAN, *Newmarket, Ont.*

Reply by Prof. John Craig, Ottawa.

The raspberry leaves forwarded for examination are affected by what is known as the mildew of the raspberry; a genuine powdery mildew, technically called *Sphærotheca humuli (D.C.)*

This frequently attacks wild raspberries, but, to my knowledge, has not been destructive in cultivated plantations. It is questionable whether it could be satisfactorily treated if it has secured a good hold on the plants. Flowers of sulphur may be successful in combatting this. It should be applied to the canes and upon the ground, in the same manner as used to prevent the powdery mildew of the grape. Where plantations are severely attacked, it will probably be best to cut off the canes and burn them after the fruiting season in autumn.

Leaf-Blight of the Rose.

683. SIR,—I enclose a sample of rose leaves taken from a Marechal Niel rose in my glass house. Please tell me what is the pest, and prescribe a remedy.

J. H. SINCLAIR, *New Glasgow, N. S.*

Reply by John Craig, Horticulturist, Ottawa.

The enclosed rose leaves are affected by two fungous diseases. The one causing the black, irregular blotches on the upper surface is known as the "Leaf-blight of the Rose" (*Actinonema rosea, Fries*). The leaves are also affected by a rust more or less common to roses, both under glass and out of doors. This rust is called *Phragmidium mucronatum, Winter.* When roses grown under glass are affected by these diseases, the trouble can usually be prevented by applying flowers of sulphur, or subjecting the plants to the fumes of sulphur. Outdoor plants may be successfully treated with a weak formula of

Bordeaux mixture, say three pounds of copper sulphate to three pounds of lime, to forty gallons of water. If the plants are in bloom, ammoniacal copper carbonate can be substituted, and by using this the flowers will not be stained. In house culture the fallen and diseased leaves should be carefully collected and destroyed. For the treatment of scale diseases a wash of strong soap suds is probably the best preventive. Kerosene emulsion, if applied frequently and carefully, will be found the most satisfactory on the whole.

Open Letters.

Quid Pro Quo.

SIR,—On page 315 may be read: "*As a rule* we need not expect the regular practising M. D.'s to recommend preventives to disease, when it puts money in their pockets to keep people comfortably sick." The rule by which the writer gauges his fellow-men is not a large one, neither does it indicate the possession of a large and generous disposition on his own part. The assertion is not only ill-natured, but untrue. It is not safe, evidently, for a member of the medical profession to call in question the authoritative declaration of this Solomon come to judgment. At least he may only do so at the risk of having his character basely aspersed. It is surely not calculated to strengthen a recommendation relating to medicine to allow it to be inferred that those who have made a special study of the subject are opposed to it. Possibly the use of fruit in the diet may be one of the very few practices that require no discretion in their application. Fruit, perhaps, does good always; but does harm never. An apple-diet may be the best for a dyspeptic. Because I am a practising M.D. I cannot be expected to know—or, at any rate, not to tell. The writer agrees with us, doctors, in one respect. When we find it necessary to give a particularly nasty dose, we endeavour to disguise the nauseousness of it by the addition of something nice. Acting on this principle, Mr. L. Foote would fain conceal the ill-nature that constitutes the active principle of his composition by mingling with it a little sanctimony. He has, however, overdone it, and the result is a compound so vile that it may be trusted to serve as its own antidote. Nevertheless these petty slurs upon a noble profession, to which mankind at large is so greatly indebted, are so often repeated and allowed to pass unrebuked, that every ill-natured fellow thinks he can do this thing with impunity. If the doctors are not all saints, it may yet be asserted that no body of workers on the footstool can compare favorably with them in the amount of gratuitous services ungrudgingly rendered to their fellows, irrespective of race, creed or social condition; in confirmation of which I appeal to the personal experience of each one of your readers. Yours truly,

W. O. EASTWOOD, M. D.

Trotter's Hybrid Plum.

SIR,—In reply to your inquiry I may say that I have only one tree of my hybrid plum. Last year was the first bearing. This year I pulled a twelve-quart basket of plums from it, and I believe it will be very productive. The fruit is of uniform size and appearance, and colors well, taking on a beautiful bloom before it is fully ripe. It hangs well on the tree when it is ripe, and keeps well after being gathered. Twelve plums which I had at the exhibitions weighed 1 lb. 8 oz., and were much admired. Some of our best judges pronounce the quality excellent when fully ripe. The tree is a rapid and strong grower and appears to be healthy. It is from hardy parents. The foliage is thick and retains its leaves late in the season.

R. TROTTER, *Owen Sound.*

Our Fruit Table.

A Seedling Apple has been received from Mr. S. Greenfield, of Ottawa. says the tree is one of the hardiest he has in his garden, and it grows on heavy clay. The apple is very beautiful, about equal to the famous Gravenstein in appearance, and is very good in quality; size large, measuring three by three and a quarter inches in diameter; season, September and October. Possibly this apple would be of great value where the Gravenstein is too tender.

Fruit Samples Received.

Currants from F. W. Porter: Mount Forest, Victoria, White Grape, Red Dutch, Porter's Seedling, and other seedlings, all fine samples, but much bruised in transit. Date of receipt, August 18th.

Plums from A. M. Smith for name, medium size, dark blue. We do not recognize them. Mr. Cline thinks they are either Glass or Quackenbos, and under size on account of the dry season.

Two Seedling Peaches from B. R. Nelles, Grimsby. One is a cling stone, yellow fleshed, of very large size, resembling lemon cling, but very late, ripening about middle of October; the other, a medium sized yellow peach, about the size of the Smocke, a free stone, of fair quality, ripening about the same time.

Canadian Grown Figs.—We have just received from the Central Experimental Farm, Ottawa, a package containing nine ripe figs, in excellent condition. They are of fine quality, and show what is being done in fruit growing under glass in Canada. At Niagara-on-the-Lake, one of the members of our Association ripens the fig out of doors. He cuts back the old wood every year to the ground, and lays down the young growth, and covers it with soil. In this way he grows a crop every season.

A Big Apple comes to hand from the Beaver Valley, grown by Mr. Andrew Thompson, near Clarksburg. The grower says it keeps till the last of March. It is about four inches in diameter, somewhat oblong in shape, ribbed, and crimson in color.

The Rochelle.—A hardy winter seedling apple, one sample of which comes to hand from R. J. Shepherd, Montreal. He writes: "The original tree is about eighteen years old, and grew from the root of root graft, set out in my nursery at Come, in 1877. It still remains where it first sprouted, having never been transplanted. The tree is to all appearances perfectly hardy, and bears abundantly every second year. Growth vigorous, spreading. like St. Lawrence. The terminal shoots large and well ripened every year. I am inclined to think this apple is a fairly good keeper, and judging from its fine coloring and good quality, it ought to be a good apple for export." The apple is very attractive, almost equal to Duchess, and if a good keeper and hardy, it may prove valuable, When tested we will report on the variety more fully.

THE COURSE IN HORTICULTURE AT GUELPH.

Probably very few of our readers know of the excellent course in horticulture which is now provided at the Ontario Agricultural College. A year ago, Mr. H. L. Hutt was appointed professor of horticulture, and he has since been working out a careful course of instruction, which is persued by students of the second year. The fruit farmers of the next generation will be far in advance of the present one, especially those who take advantage of such excellent priviliges. We therefore advise all young men intending to follow fruit or vegetable gardening to take the full course at this excellent college. The following is an outline of the course in horticulture :—

1.—FRUIT GROWING.

Introduction.—Brief history of Horticulture ; extent and importance of the industry ; Ontario as a fruit-growing country ; the outlook for the fruit industry ; requisites for the business.

Leading Principles in the Growth of Trees.—Description and function of roots, stems, branches, buds, leaves, flowers, fruit and seeds. Illustrated by specimens in the class-room.

Production of New Varieties.—Species and varieties; natural and artificial pollination ; crossing and hybridizing practised by students in the green-houses and orchards.

Propagation of Varieties.—By cuttings, layers, grafting and budding. Illustrated by specimens and practised by students in the green-houses.

Setting Out Orchards and Fruit Plantations —Suitable soils and situations ; distances for planting ; marking out the ground; obtaining nursery stock ; transplanting ; watering ; mulching.

General Management of Orchards and Fruit Plantations.—Cultivation ; manuring ; spraying ; thinning fruit ; implements suitable for the different operations.

Different Kinds of Fruit.—Apples, pears, quinces, plums, apricots, cherries, grapes, raspberries, blackberries, currants, gooseberries, strawberries, etc., treated of in detail according to the following syllabus :—(1) History and botanical matter ; (2) Extent of cultivation ; (3) Methods of propagation ; (4) Soils suitable ; (5) Culture required ; (6) Methods of pruning and training ; (7) Time and manner of harvesting ; (8) Packing and marketing ; (9) Method of keeping and storing ; (10) Varieties grown.

2.—VEGETABLE GARDENING.

Gardening as an Occupation.—Extent and importance of the industry ; market gardening near large towns and cities.

The Farmer's Garden.—Location, size, and soil suitable.

Fertilizers for the Garden.—Barn-yard manure ; composts ; artificial fertilizers ; time and manner of applying them.

General Management of Garden.—Preparation for and cultivation of crops ; rotation of crops ; plan of garden.

Garden Seeds.—Method of obtaining ; vitality ; time and manner of sowing ; conditions favorable to germination.

Raising Plants.—Construction and management of hot beds and cold frames ; transplanting.

Forcing Garden Crops.—Illustrated by growth in the green-houses of radishes, lettuce, onions, potatoes, tomatoes, cauliflowers, cucumbers, melons, rhubarb, mushrooms, etc.

Garden Crops.—Beets, carrots, parsnips, salsify, radishes, turnips, potatoes, onions, asparagus, spinach, lettuce, cabbage, celery, rhubarb, cauliflower, peas, beans, corn, melons, squashes, cucumbers, tomatoes, herbs, etc., treated of in detail according to the

following syllabus :—(1) History and botanical matter ; (2) Importance and extent of of cultivation ; (3) Soils and fertilizers suitable ; (4) Propagation ; (5) Culture and general management ; (6) Harvesting ; (7) Packing and marketing ; (8) Storing ; (9) Varieties grown.

3.—Landscape Gardening.

Location of buildings ; making and care of lawns ; kinds, arrangement, and care of trees, shrubs, vines, hedges, and flower beds ; course and construction of walks and drives ; general surroundings.

4.—Arboriculture.

Importance of forests ; their effect on climate ; different kinds of trees ; their occurence, habits and uses ; where trees should be planted ; raising trees from seed ; planting operations ; transplanting large trees ; care and management of trees, with a view to ornament, shelter, and economy.

5.—Floriculture.

Soil for house plants ; methods of potting ; propogation of plants ; effect of atmosphere, temperature and light on plants ; watering ; trimming and training ; treatment of frozen plants ; resting plants ; kinds of plants suitable for window or conservatory ; hanging baskets ; rockeries ; flower beds ; etc. ; arrangement of plants for effect.

The Annual and Winter Meeting of the Ontario Fruit Growers' Association will be held in Orillia, in the Town Hall, beginning on Tuesday evening the 4th December, at 8 o'clock, with an illustrated lecture on Fungi, by Prof. J. H. Panton, of the Ontario Agricultural College, Guelph. Papers will be read and addresses made by prominent fruit growers from every part of Ontario. The meetings will be continued throughout Wednesday, Thursday, and Friday, beginning at 11 a.m. ; 2 and 8 p.m. All sessions are open to every one—ladies or gentlemen—interested in fruit growing. Prof. Beach, of Geneva Experiment Station ; Professors Craig and Fletcher, of Central Experimental Farm, Ottawa ; Prof. Hutt, of O. A. C., Guelph ; Mr. James, Deputy Minister of Agriculture, Toronto, and others, are expected to be present.

Numerous papers will be contributed by members of our Association for publication in our report, and the most of them will be read and discussed at this meeting. Programmes will be ready soon, and may be had from the Secretary, Grimsby.

There will be no public meetings until Tuesday evening at 8 o'clock, when the lecture above mentioned will be given. On Wednesday and following days the public sessions will open at 10.30 a.m., thus giving time for committee meetings in the morning.

The Board of Control of Experiment Stations will meet on Tuesday afternoon at 2 o'clock. The Directors of the Association will meet on Wednesday morning at nine o'clock, and arrange for details of programme and considering report of Experiment Stations.

Question Budget.

Is Prince Engelbert a desirable plum? What are its faults? Is the tree healthy and productive? Can you name any peaches more suited to this locality than Crosby, Hyne's Surprise, Horton Rivers? Is there any other class of Dwarf Juneberry better than the ordinary Saskatoon?

ED. MANS, *Echo Place, Brant Co.*

What fruits can be grown in South Edmonton, Alberta? Would Russian apples succeed there?

C. E. GWYN, *Dundas.*

APPLE CROP.

To-day's cable from Messrs. Woodall & Co., Liverpool, reports market active and prices steady at 11/ to 15/ for Baldwins 12/ to 14/6; for Greenings, 19/ to 23/; Kings, seconds, about 3/ less. London, Glasgow and Hull, offer about same prices.

Estimated shipments to Liverpool,	London,	Glasgow:
From Montreal 16000	——	12000
" Boston. 28000	6000	——

A. OTIS, *Montreal, 26th Oct.*

MESSRS. JAMES ADAM, SON & Co., Liverpool, this day cable: "Winters, market unchanged. Falls, market declining. Baldwins, 11/ to 15/; Greenings, 11/ to 13/6; Spys, 12/6 to 16/." Messrs. B. and S.H. Simons, Glasgow, this day cable "There is a favorable change in the market: Baldwins, 15/ to 17/; Greenings, 14/ to 16/; Kings, 22/ to 24/."

M. H. PETERSON & Co., *Colborne, Ont.*

Apples.—Receipts still come pouring in in large quantities, and sales are very slow at $1.00 to $1.75 per barrel for fall varieties and $2.00 to $3.00 per barrel for winter varieties.

Pears.—The market is still over-supplied with pears, which is owing to the heavy receipts during the week; basket pears are unsalable at any price, while barrels are selling slowly at $2.00 to $3.00, and fancy $3.50 to $4.50; California pears $1.50 to $2.00 per box.

Peaches.—With a limited demand and a full supply California peaches are selling at $1.00 to $1.25 per box.

Potatoes.—The demand for potatoes continue good, and we quote 50c. per bag of 90 lbs. on track, and 55c. to 60c. in a jobbing way.

Onions.—Canadian onions are selling well, but the receipts are very heavy, which keeps the market over-supplied at $1.75 to $2 00 per barrel. In Spanish onions some good sized sales have been made at 67½c., but for jobbing lots we quote 75c. to. 80c. per crate.

Montreal Trade Bulletin, Oct. 26.

The Forms for Fruit Stations.—Secretary Woolverton has favored us with a set of the blank forms to be used by the managers of the several experimental fruit stations in Ontario. These forms are ruled with printed headings, asking for the fullest possible information regarding the fruits under cultivation. When properly filled in they will present in tabular form complete details as to the varieties, origin and characteristics of the tree, bush or vine, the soil and management, size, form, color, quality, productiveness and other points relating to the fruit, as well as its freedom from disease, marketing qualities, seasons, etc. These forms show that the intention is to make the operations at the Ontario experiment fruit farms as thorough and useful to everyone interested as it is possible to make them.—*The Weekly Globe.*

RED BIETIGHEIMER.

Of German origin. Tree a strong grower and abundant bearer ; flesh white, firm, sub-acid, with a brisk, pleasant flavor ; in season from October to February.

THE

Canadian Horticulturist

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THE OLD YEAR.

Since thy dim dawn, Old Year,
How much of hope and fear!
How many a bitter tear
Hath fallen from sorrow's eye!
How many lithe and bright,
Who hailed thee with delight,
Have bowed before time's might
And laid them down to die.

Billow of time, sweep on!
Go join the ages gone,
Where earth's sun never shone;
Farewell! but not for aye;
Thou'lt meet me on that day
When sun and stars decay,
And time shall be no more.

THE RED BIETIGHEIMER.

WE have such an excellent list of autumn apples already in cultivation, that it seems almost unnecessary to place before our readers any other variety. The Gravenstein is almost perfect, so good in quality, so excellent in appearance, so healthy in growth; and the Blenheim Orange is another excellent fall apple, averaging larger than the Gravenstein; but here is another aspirant for the precedency of apples of its season, for market purposes, viz., the *Red Bietigheimer*.

It is comparatively new, the first notices appearing in Canadian publications about ten years ago. It is of German origin, and seems to succeed well in Canadian soil. The tree is a vigorous grower and abundant bearer; the fruit large to very large; skin pale green, mostly covered

with purplish crimson ; the flesh is mild, sub-acid with a brisk pleasant flavor. Season, September and October ; some say it can well be kept till February. The apple is large and handsome, and its peculiar shade of color commands ready attention.

This variety, among others, was shown by the Province of British Columbia, at the World's Fair, last year, and attracted constant attention. One sample weighed a pound and a-half avordupois, and measured nearly sixteen inches in circumference.

We have not yet grown this apple at Maplehurst, and therefore we would be glad to hear from anyone who has grown it in Canada.

NOTES ON THE NOVEMBER NUMBER OF THE HORTICULTURIST.

General Grant Crab.

I QUITE approve of the remarks made under this heading referring to Siberian crabs in general, but think the selection of the frontispiece unfortunate. In my experience, and I have known it for fifteen years, General Grant is one of the poorest of the whole class. It is true that the tree is vigorous, productive and decidedly ornamental when in full bloom, but the quality of its fruit is, to my taste, simply execrable ; indeed such a combination of astringency and bitterness is rarely to be met with. I cannot account for Downing's estimate of its quality. In this respect it ranks next to its American cousin Soulard, which is a true variation of *Pyrus coronaria*. When such fine varieties as "Whitney No. 20," "Martha," "Orange" and "Gibb," can be grown with equal ease, there seems little reason for cultivating General Grant. The report of the Montreal Horticultural Society for 1884, contains an exhaustive paper on Siberian crabs, by the late Charles Gibb, of Abbotsford. He says of this variety, "It might be useful further North. I do not seem to want it either for home use or for market, and have cut all my trees down."

NOTE BY EDITOR.—Mr. Craig's remarks are quite in place regarding the reading matter on the colored plate of General Grant crab which describes it as of good quality. The Lithographic Company always print these descriptions on the plates, but we never allow them on our work. This last order of 18,000 when it came to our binders had this blemish, by some mistake of the Company, and it was too late to refuse them. Our readers will please pay no attention to the descriptions printed on the plates.

Talman Sweet in British Columbia.

Mr. Starret's experience with Talman Sweet raises an interesting question regarding the adaptability of certain varieties to different soil and climatic conditions.

Talman Sweet is known to succeed in many trying sections, as far as cold is concerned, in the north-western States and in Canada. In the trial orchard at the Experimental Farm, Stump is decidedly tender, being injured each winter, while Talman Sweet alongside rarely loses an inch of its terminal growth. These facts illustrate the value of multiplied testing stations, and so emphasizes the good work now being undertaken by the Ontario Government, in conjunction with the Provincial Fruit Growers' Association.

Arch-Grafting.

This ingenious method of strengthening the tops of trees, as described by Mr. Leveans, is decidedly novel and apparently of much practical value. It calls to mind a useful system practised by Mr. Robert Jack, of Chateauguay, P.Q. In his large orchard many old trees have been prevented from splitting by bracing with iron rods. Whenever a fork showed signs of splitting, the two principal limbs involved were connected at some distance above the crotch by means of an iron bracing rod. This brace consisted of a round iron rod of the proper length to connect the branches. Each end of this rod was supplied with a threaded bolt attached by a loose eye or loop. Holes were then bored through the branches, the bolts inserted and the operation completed by the addition of washers and burrs. Many of these braces had been in use for years without any apparent local injury to the trees.

Acclimation of Plants.

The whole subject embracing the acclimation of plants and its possibilities, is an exceedingly interesting one, and one allowing free scope to the theorist.

It does not seem to me feasable to discuss this subject apart from the closely allied principle of heredity. Acclimation only appears reasonably possible when working through heredity. That this has occurred, there are too many familiar examples about us to allow us to doubt for a moment the statement. The Box Elder (*Uegundo aceroides*) of Ohio and that of Manitoba are botanically the same, yet the Ohio form is not hardy at Ottawa, much less in Manitoba. The Eastern American elm, botanically the same as that native to Manitoba, winter kills at Brandon. These Northern forms have, undoubtedly, been developed by a slow system of acclimation working through seedling production. Within the present lifetime of man, the apple and most other cultivated fruits have extended their area of profitable cultivation northward, always through seedling production, accidental or otherwise; but no amount of nursing has ever rendered any individual of these fruits better able to withstand the vicissitudes of climate, or has added to its hardiness—that is in the life of a single generation. So that it would probably be a waste of time and energy to attempt the production of hardy varieties by propagating, by grafting from individuals grown in cold climates; but by following nature's method through seedling production, the area of probable success rapidly widens.

New Grapes.

I am glad to corroborate what has been said regarding the Victoria grape. It has proved vigorous, productive, and of fair quality at Ottawa, but does not ripen early enough for growers in this latitude. Woodruff is an exceedingly handsome variety, productive, but rather poor in quality and later than Concord. El Dorado is my favorite white grape, but is not profitable, and is partially self-sterile. Vergennes is one of the most satisfactory red varieties in the experimental vineyard. Combined with great productiveness are good quality and excellent keeping properties. It is the best winter grape in our collection. Miller grape is a very happy combination of the European *V. vinifera* and the American *V. cordifolia*. It also keeps excellently. Secretary is a variety of the same type.

Figs.

The note referring to "Canadian Grown Figs," recalls the fact that a sample package of figs grown by H. Pafford, at Niagara-on-the-Lake, mailed to this office, but for some unknown reason never came into my hands. I think the credit of growing this sample (without glass) should be awarded to Mayor Pafford.

Ottawa. J. CRAIG.

NOTE BY EDITOR.—The figs came to hand, with a tag on which was printed "From the Central Experimental Farm." Evidently they were forwarded here by mistake.

THE LIEBIG APPLE.

The Russian apples were introduced in the belief that they would prove of special value for what is familiarly called the cold North, and their introduction will undoubtedly make it practicable to successfully grow this fruit several degrees further north than would otherwise be possible. A variety that is now being planted in large quantities in severe sections in Iowa, Minnesota and Wisconsin is the Liebig. It is a variety of poor quality for dessert purposes, though not to be despised for this use where other fruit is scarce. Its chief value, however, is a cooking apple, for which purpose it is doubtful if it can be excelled. It is a winter apple in north Iowa. The fruit is large, broadly conical in form, and when ripe, well colored with red. The tree is a vigorous grower of spreading habit, seldom, if ever, blighting badly, and very much hardier than the Duchess of Oldenburg. It is, perhaps, the hardiest of the valuable kinds of apples, and well worth trying by those living in the extreme North and by those who are situated where the common belief is that only crab apples can be grown. It is not a new variety, and can be bought of the general nursery trade in the Mississippi valley. The Hibernal resembles it closely, and the two names are by many nurseries applied to the same kind.—Rural World.

CODLING MOTH AND APPLE INSPECTION.

THE codling moth must be routed from Ontario orchards, and our shippers must exert themselves more faithfully in spraying with Paris green, the best known means of exterminating it. Then, in packing, all wormy apples should be sold at home or fed to stock ; never shipped to distant markets, else the results will prove most disastrous to our Canadian export trade. Recently a car load of apples has been seized in British Columbia by the fruit inspector of that province and ordered to be destroyed, because they were found to be infested with this moth. This is in accordance with one of the laws of British Columbia. The section reads : "All persons possessing, forwarding or distributing trees, plants, nursery stock or fruit, infested with any insects, such as woolly aphis, apple tree aphis, scaly bark louse, oyster shell louse, San Jose scale, red scale borers, currant worms or other known injurious insects, shall have the same disinfected and cleansed of such insects before forwarding, distributing, selling or disposing of said plants or fruits."

Here is the clipping from the Daily Globe of Friday, November 2nd, in reference to the seizure of these apples :

Alleged Apple Pest

Mr. Bosworth, Assistant Freight Traffic Manager of the C. P. R., received the following dispatch yesterday : "British Columbia Government Fruit Inspector is condemning apples shipped from Ontario on account of their being infected by a larvæ of the codling moth, and he is insisting that a car load of apples now there shall be destroyed by fire. Unless shippers are careful in filling orders for British Columbia market to see that the fruit is free from infection of this kind, serious loss will result." Inquiry by the Globe among the fruit dealers of this city failed to reveal any cause of such alarm as is suggested by the dispatch. There is no prevalence of the codling moth this year, and the shipment in question they think must have been of fruit poorly handled, if it was not made up of windfalls.

Now, there is no doubt that such carelessness is the management of orchards by some growers, and consequently their fruit is badly infested with the codling moth. But this state of affairs can, and should, be remedied. Sheep or pigs in the orchard will eat all the wormy fruit as it falls, hay bands will catch them, spraying will poison them, and careful sorting will prevent any of them being exported.

Would it not be well for growers of first-class fruit to be all agreed together that they will pack only stock which is free from worms, and graded according to our No. 1 and 2 classes, which have already been described in the CANADIAN HORTICULTURIST, and these hand in their names to the editor, for publication, under a special heading, in the advertising columns? Such a list would not need to cost each grower more than ten cents per month ; and circulating, as it would, among the leading fruit merchants of Canada, United States and Great Britain, would tend to bring our best growers into connection with the best buyers. The grades referred to, as defined by the writer, are as follows :—

Grade No. 1 shall consist of well-grown samples of the variety named, somewhat uniform in size, well shaped, of normal color, and free from scab, worm-hole, curculio, knot, etc.

Grade No. 2 shall consist of apples free from scab, worm-hole, but which, from lack of uniformity in size, and owing to deficiency in color or abnormal shape, are unfit to be graded No. 1.

These grades had the approval of our Association, but for some reason or other the Act as passed by the Dominion requires grades which cannot be conformed with. The Act is, therefore, impracticable, and should be changed. It will be found under the General Inspector's Act. The portion referred to reads as follows :—

Apples.

109. In the inspection of closed packages of apples, the inspector shall open not less than one package in five, and, if the manner of packing is found to be fraudulent or unfair, then he shall open all the packages put up by such shippers.

(2) Every package found to be fairly and properly packed, he shall brand as "No. 1 Inspected Canadian Apples," or "No. 2 Inspected Canadian Apples," as the case may be, if fit to be so branded.

(3) The inspector shall also examine the varieties of apples submitted for inspection, and correct the nomenclature if incorrectly marked, or, if the name of the variety is not marked, he shall cause it to be marked upon the package.

(4) The inspector may charge a fee of ten cents for each package inspected by him, said charge to cover the cost of opening and closing the package.

110. No. 1 inspected Canadian apples shall consist of perfect specimens of one variety, of uniform size, and, in case of a colored variety, fairly uniform color, and shall be free from scab, worm holes, knots or blemishes of any kind.

(2) No. 2 inspected Canadian apples shall consist of specimens of one variety, free from scab, worm holes, knots or blemishes of any kind, but not uniform in size or color.

The report of the committee of our Association on this subject will be found in our report for 1892, page 65. This committee, of which Mr. A. H. Pettit was chairman, advised that these grades be amended in accordance with the terms originally defined in the CANADIAN HORTICULTURIST, and this the Dominion Government, through Mr. J. F. Wood, promised to consider.

The desire for an inspector of apples is widespread, not only among fruit growers themselves, but also among apple merchants. In proof of this, here is an extract from the Fruit Trade Journal, published in New York :—

"Many Canadian merchants are complaining of the swindling operation of some packers, who top off barrels of apples with one or two good layers, and the balance with culls. There is talk of having the Legislature take up the matter and appoint an inspector. Leading fruit men of Ottawa have been interviewed by the Free Press as follows :—

"Mr. H. A. Brouse said :—'Yes, I certainly am in favor of a scheme of Government inspection. The loss is something terrible, but we have adopted a remedy for our financial loss, though the annoyance and trouble cannot be repaid. We buy our goods in a way that we deduct so much for loss or deteriorated quality, but even then the evil is not avoided. We are annoyed by mixed barrels and fraudulent branding. It is impossible, when getting in hundreds of barrels, to examine them all, and we often run against a badly packed barrel.'

"Bate & Co. said :—'Yes, we are certainly in favor of an inspector. It is a long standing complaint and a serious loss, and cannot be remedied too soon.'

"Kavanagh Bros. said :—'This bad packing of fruit is a perfect nuisance, and a matter of a great loss. Certainly, a fruit inspector should be appointed at once.'"

The question before us is: Is apple inspection practicable or impract and if practicable, how?

Perhaps our previous plan was impracticable. No man is willing to undertake the work of apple inspection on the mere chance of getting now and then a car load of apples to inspect at ten cents a barrel, nor is any man willing to become responsible for the marking of a grade of apples in car load lots and thus assuming the responsibility of saying that the whole are No. 1 grade; but he can condemn such lots as he finds to be packed in a fradulent manner. It would be well to employ an expert fruit inspector by the Dominion, who shall be paid a liberal salary, and whose business it shall be, (1) in the spring to inspect fruit trees and vines that are being imported and thus prevent the introduction of fungus diseases and injurious insects; (2) in the month of June or July and August, to enforce the Plum Knot Act and the destruction of peach yellows; and (3) from September to March, to inspect such shipments of apples as it may be possible for him, in order to prevent, as far as he can, the shipment of any fruit that he finds is fradulently packed, or which is infected with codling moth or apple scab. Also in case of any apples found to be inferior to the brand under which they are shipped, he should cause the brand to be erased from those barrels. To the same man appeal could be made by either buyers or sellers, in case of a dispute as to whether a certain lot of apples which had been purchased was up to the grade marked upon them.

Certainly the grades should be clearly defined; and then as much publicity as possible should be given to them, in order that they may become a a convenient basis of bargain.

DROUTH ON NEWLY SET TREES.

A period of drouth is an exceedingly trying time for newly set shade or fruit trees. They then require the greatest care, and unless continually watched with an eye to their needs they will surely die. More failures result from neglect of newly planted trees than from any other cause. When trees are set they should be well mulched, but this alone is not sufficient to insure success. When a hot, dry spell comes on, the surface of the ground around the trees should be well and frequently stirred. When watering is resorted to, a mulch, not only in the immediate vicinity of the tree trunk, but for some distance around the roots, will prove of the greatest benefit in retaining the moisture. Unless the trees are thus mulched a watering in a dry time is as likely to do harm as good. The water applied should be put on at evening, and a thorough soaking should be given. Never allow the ground around the trees to become hard and crusted over the surface if you can possibly help it, and you can by keeping on a good mulch. Any substance that will soak up moisture and retain it well will do to put around trees. Such a mulch serves a double purpose; it retains moisture in the ground below it, and holds moisture in itself to be given up as the soil beneath it dries. The water should be put on only when the ground where it is applied is shaded.—The Farm.

PRUNING THE GRAPE.

SIR,—Please tell me how to prune grape vines, and when should it be done?

H. W. BRAINARD, *Notch Hill, B. C.*

THERE is no better time than the mild days of December for pruning the grape, providing the wood is not cut back too close to the new buds. It may also be done in early spring, but if deferred too long there is loss of strength by profuse bleeding. There are many systems of pruning the grape, each of which has ardent advocates. At Maplehurst we practice the Fuller system, which we may briefly describe as follows:—The first year after planting allow only one stem to grow (Fig. 709), and at the end of the first year, cut this back to within about one foot from the ground. The second year allow two buds to grow, producing two branches as in Fig. 710.

At the end of the second year, bend down these two branches to form two arms, and these should be trained each way four or five feet along the lower wire, forming what are known as the "two arms." From these uprights are grown about every foot apart, as in Fig. 711, and every year these are cut back to within one or two buds of the old wood of these two arms.

FIG. 709.

It is a great temptation to do longer pruning, or to have many of the uprights uncut; but the result seems always to be disastrous, for the growth will go to these higher parts to the almost entire abortion of the buds below. Then when it becomes very desirable to cut back, there are no buds left on the main arms to renew the growth for the season following.

In addition to this, the only pruning needed in the summer, is simply to rub off superfluous sprouts when they are just beginning to push, and to stop the young growth about a leaf or two beyond the last bunch of grapes.

FIG. 710.

The tying up is very important and often neglected. Three wires are sufficient, and to these the uprights should be kept tied, as they grow, or the vineyard will present a very untidy appearance.

FIG. 711.

THE PALM TREE.

Among the Indians of Brazil there is a tradition that the whole human race sprang from a Palm tree. It has been a symbol of excellence for things good and beautiful. Among the ancients it was an emblem of victory, and, as such, was worn by the early Christian martyrs, and has been found sculptured on their tombs. The Mohammedans venerate it. Certain trees, said to have been propagated from some originally planted by the prophet's daughter, are held sacred and the fruit sold at enormous prices. The day upon which Christ entered Jerusalem, riding upon the colt of an ass, is called Palm Sunday, being the first day of the Holy Week. In Europe real Palm branches are distributed among the people. Gœthe says:

"In Rome, on Palm Sunday,
They have the true Palm,
The cardinals bow reverently
And sing old psalms.
Elsewhere these songs are sung 'mid Olive branches;
More southern climes must be content with the sad Willow."

The books relating to the religion of Buddha, were nearly all of them written upon the leaves of the Fan Palm, and by missionaries they have been used in the place of paper. The noble aspect of this tree, together with its surpassing utility, has caused it to be called "the prince of the vegetable kingdom," and it has been immortalized in history, mythology and poetry.—From Trees in History and Mythologe.

THE NEW YORK STATE FAIR. SOME NEW FRUITS.

HAVING had the privilege of judging the fruits at the New York State fair, and also some of our own fairs, I thought perhaps a few notes of comparison and a description of how our neighbors do things, might be of interest to your readers. Taking quantity, the New York State Fair was ahead of anything I have seen outside of the World's Fair. The Society had offered $200 for the best collection of fruits exhibited by any individual or association, and there was a strong competition between the Western New York and the Central New York Horticultural Societies. The prize being won by the Western, which had over 1,000 plates of fruit on exhibition. The total of fruit as exhibited was 400 plates of grapes, 1,300 of pears, 5,500 of apples, 900 plums, 250 peaches, besides samples of currants, berries, etc., and you can see they want nothing small of a man over there, when they asked one man to judge it all. The arrangement of this fruit, owing to the want of proper buildings, was anything but artistic or convenient for inspection or judging. The building which had been constructed for horticultural exhibits, was largely taken up with plants and flowers—which were very fine—and a large portion of the fruit had to be shown under canvas, two large tents being erected for this purpose. In point of quality, none of the fruits, excepting plums and pears, would excell the fruits exhibited at our township and county fairs, and these would not exceed or equal our display at the Industrial Exhibition, only in the number of varieties. Ellwanger & Barry, of Rochester, showed 125 varieties of pears, besides a large exhibit of plums and grapes. S. D. Willard, of Geneva, showed a fine display of plums, many of them new varieties; among them were the Burbank, Black Diamond, Archduke, Monarch, Prince of Wales, Field, and others. There was, among other new things exhibited, a plum called Palmer's favorite, which attracted my attention. It was similar in shape to Pond's Seedling, though not quite as large, a dull red or pink, but peculiarly mottled, and the quality was excellent. I hope we may, ere long, get it to test at our Ontario Experiment Stations. There was a large new white currant shown by a Mr. Marvin, large as the White Grape and considerably later. The State Experimental Station showed a very fine and instructive exhibit of fruit and vegetables, nicely arranged and named, which was well worth studying, though I had not time to inspect and take notes of it. But just here I would like to suggest that an exhibit from our Experiment Stations should be arranged at Toronto and some others of our important fairs, another year, and properly labeled, so people could learn to know the different varieties of fruits when they see them, for I find a deplorable ignorance in this respect,

even among exhibitors, in all of our local fairs. The old dodge of giving a new name to some old variety of fruit, in order to sell it I suppose, was observed here in one or two cases. Our old Pond's seedling was shown under the name of Saratoga. I had expected to learn something of system, etc., in managing and arranging fruit exhibits, but I was somewhat disappointed. I was requested to be on hand the 6th of September, the day the fair opened, but the fruit was not in readiness for judging till afternoon of the 8th, as entries kept coming in till that time and were received, and some even put up after I had commenced my work. But all drawbacks and inconvenience was amply made up by the courtesy and kindness of the officials, some of whom promised to come to Canada and take lessons in arranging fruit exhibits.

St. Catharines. A. M. SMITH.

Currants and Gooseberries, Fall Planting.—The following is an answer to "A Reader."—By all means plant in the fall, and as early as possible, your plants will gain almost a year's growth by it, that is if they are in good, healthy condition when received, and the ground in which you plant them is not low enough to hold water on in winter. Both gooseberries and currants start to grow so early in the spring that it is better to plant them in fall than in spring. In planting, don't cut them hard back, simply tip them, but cut out the branches, leaving from three to five to each plant according to its strength. They do not need covering in winter, but a mulching of manure up about them will help them. We sometimes have it as cold as 25° to 30° below zero here, and I find both gooseberry and currant bushes quite hardy. I would also plant raspberries now. Cut the canes back to eighteen inches or two feet, and before hard frost sets in lay down the plants and cover them with a good coating of soil. Planting these things in the fall has been my practice for years, and I seldom lose a plant.—Gardening.

Careless Fruit Packing.—It pays to exercise care in putting up apples for the big markets. A study of the conditions in New York, Boston or Chicago, shows there is much need of repeating the old injunctions about assorting and selecting fruit. It is hard to find a really first-class barrel of apples. In almost every package there will be enough small, gnarled or wormy fruit, to reduce materially the price of the package. It is a grievous blunder from every standpoint. Suppose apples worth $2 per bbl. when of high grade. The dull packer argues that if he smuggles in a peck of second or third-rate fruit, he will get the price of first-class fruit for it. But he fails. Instead of selling poor fruit for first-class, it results in his selling his first-clas fruit for $1.50, the price of a lower grade. This has been talked and written about, until it is a "vain repetition," but it is still necessary to repeat it. Keep the poor fruit at home—feed it to stock—or let it rot on the ground. Never ship it to market.—Am. Agriculturist.

PLANTING ORCHARDS.

A RECENT bulletin issued by the Cornell Experiment Station, by L. A. Baily, treats this important subject at some length. We condense some of the more important paragraphs as follows:

Preparation of Land.—It is generally best to put the land in hoed crops the season before planting, as most soils need the cultivation to bring them into a mellow and uniform condition. If the subsoil is hard and impervious, plow very deep, and in some cases, as for dwarf pears, subsoiling will pay well. Lands which hold surface water must be tile drained, whether flat or rolling.

When to Plant.—My own opinion is that fall planting is generally preferable to spring planting upon thoroughly drained soils, particularly for the hardy tree fruits, like apples, pears, and plums; and if the ground is in good condition and the stock well matured, peaches can sometimes be set in October with success. The trees for fall planting should be well matured. Some nurserymen strip the leaves from trees before growth is complete, in order to put the trees on the market for September delivery. This weakens the trees and is the cause of many failures. Place your orders for trees in August and September, with orders to let the trees stand unmolested till the leaves begin to fall. Get everything ready, and plant the trees as soon as delivered, without heeling in. Trees are mature enough to take up, in New York, in late September or early October. Unless all conditions are right, spring planting is safest.

Distance Apart.—Do not set too close. Trees are wide feeders. Roots nor branches should interfere. Do not set aside rows close to fences. Trees must be sprayed, and they should be planted so as to be most easily accessible. The following represents the outside average limit when the trees are allowed to take their natural form:

Apples	40 feet each way.
Pears, standard	20 to 25 ft.
Pears, dwarf	12 ft. to 1 rod.
Quinces	1 rod.
Peaches	20 ft.
Plums	20 ft.
Apricots	20 ft.
Grapes	6 x 8 to 8 x 10.
Currants	4 x 6 to 6 x 8.
Blackberries	4 x 7 to 6 x 9.
Raspberries	3 x 6 to 5 x 8.

Where the soil is strong and the grower makes a thorough work of cultivating, fertilizing and pruning, these distances may be reduced somewhat, except with apples. In general it is not best to plant shorter-lived trees between, but a fisrt-class orchardist may do so with profit.

How to Plant.—Plow the whole land first, and fit it well. Level culture is best. Dig holes by hand, broad and ample ; in hard soils make the holes larger than in loose, mellow soils. Set the trees an inch or two deeper than they stood in the nursery. Dwarf pears should be set three to six inches below the bud. Get the soil thoroughly firmed about the roots. Leave no air spaces. Fill the hole full enough to carry off surface water, and stamp the earth firmly about the tree.

A SUMMER HOUSE.

The simple and attractive design shown here which was furnished the Country Gentleman by Mr. Manly N. Cutter, Architect, New York. The

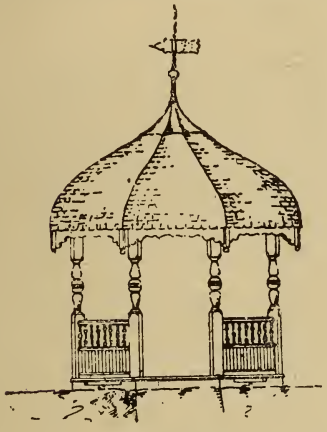


FIG. 712.

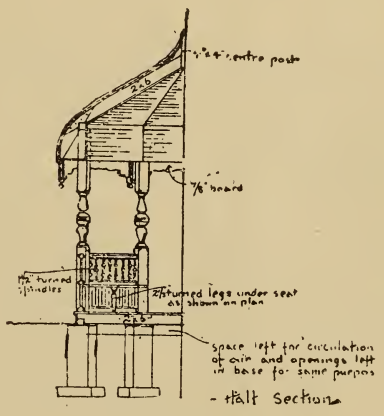

4"x4" centre posts
⅞" boards
1½" turned spindles
2½ turned legs under seat as shown on plan
Space left for circulation of air and openings left in base for same purpose
Half Section

FIG 713.

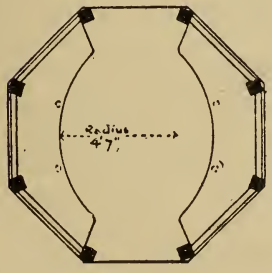


FIG. 714.

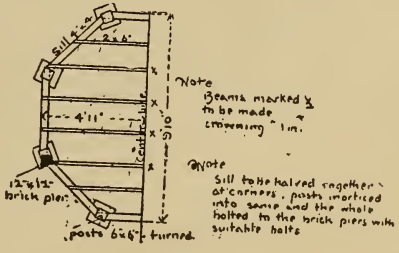

Sill 4"x4"
2"x6"
4'11"
Centre 5'0"
Note
Beams marked X to be made crowning 1 in.
Note
Sill to be halved together at corners, posts mortised into same and the whole bolted to the brick piers with suitable bolts
12"x12" brick piers
Posts 6"x6" turned

FIG. 715.

foundation consists of eight twelve-inch brick piers, on which rest sills 4 x 4, and then beams, supporting 6-inch turned columns. The roof rafters are 2 x 6, and centre posts 4 x 4. The spindles for railings are 1½ inch turned. Any wood most convenient can be employed; a close grained wood which is not quickly attacked by the weather is to be preferred, It makes a very cosy little nook, and looks well almost anywhere.

SOME NOTES ON BERRY GROWING.

RED raspberries are about as profitable as any that can be raised. As a rule they sell higher even than strawberries, and when properly treated will yield a splendid crop. Mine I suppose are the Cuthbert variety, although they were transplanted from an old garden, and I never knew positively what the variety was. They are as large as the end of one's middle finger, and very dark red when ripe. In fact, they should never be picked until they reach that color, as they are dry until that time. But when ripe they are sweet and delicious, with the true raspberry flavor. They are also quite firm, and will bear transportation well. My method of growing is to plant in hills four feet apart each way. We leave from five to seven canes to grow each year, cutting out all the rest, as well as all the suckers that come up in the early part of the season. After the crop has been gathered, we cut out all the old canes in order to give the new ones a better chance for the rest of the season. The new are cut down to about one-third their length late in the fall, and then bent over and covered with straw and earth to protect from frost. We uncover them early in the spring and tie the canes up to stakes, of which we use only one for each hill. We give them the same dose of liquid manure that is given the strawberries. It is very little trouble to keep the soil between the rows free from weeds and cut out the many suckers that appear. If the canes are not very vigorous, we leave six or seven in a hill, but generally five canes are enough to secure the best results.

I am satisfied that a moderate amount of shade is beneficial to red raspberries. The general theory is that no kind of plant will grow as well, or produce as well, when it stands near to trees, which are supposed to absorb nearly all the nutriment there is in the soil, leaving very little for any other plants. But when raspberries are treated in the way I have described, the shade of trees seems to give them extra vigor, the berries grow larger as well as the canes, and the yield is very much larger. In order to test the matter, I selected eight hills growing together in the shade, and eight growing in the open sunlight. For eight pickings I counted the berries from these sixteen hills, in all of which the canes had been treated in precisely the same manner. From the eight hills growing in part shade we gathered 3,167 berries; from the eight growing in open sunlight only 2,123 berries. Here was a difference of one-third in the number of berries alone, which was still farther increased by the size of the berries, those in shade being about one-third larger than those in sun. The eight best hills averaged nearly 400 berries each, from these eight pickings, and according to count, it took 200 of the berries to make a quart. There was a good deal of difference even among these, but six hills which were most in the shade gave respectively 351, 366, 422, 573, 483 and 414 berries. Taking the season of picking right through, these hills and others like them yielded from

four to five quarts each. My whole patch, taking the lighter hills with the heavier, averaged three quarts per hill.

There is no reason why the cultivation of raspberries should not be a profitable business if conducted as part of the work on a farm. A piece of land 200 feet square, somewhat less than an acre, would contain 2,500 hills. At an average of three quarts to the hill, there would be 7,500 quarts, which at 10 cents per quart, a fair average price during the past season, would amount to $750. It costs no more to pick them than it does to pick strawberries, the season of picking lasts no longer than a month, the care and cultivation occupy much less time than strawberries, and are consequently much less expensive. For actual profit, I had rather have two acres of well cultivated red raspberries than a thirty-acre farm stocked with ten milch cows.—Country Gentleman.

Feeding the Orchard.—I contend, says Professor Roberts (1) that the soil should be cultivated and plant food set free to the uttermost limit; (2) that leguminous and tap-rooted plants should be used as plant-food gatherers; (3) that animals should be kept as much for the value of the manure they produce as for the profit realized from them otherwise; (4) that the least possible amount of stalk and vine and limb consistent with economy and the health of the plant be grown; and (5) after having practiced all the economy possible, if there is still a lack of fertility, in order to secure the highest quality of product and the greatest net income, that commercial fertilizers of a high grade should be applied with a liberal hand. If it is found at any time that commercial fertilizers give better net results than farm manures, then there should be no hesitancy in changing from one to the other. I believe that farm manures which have lain in the open yards or have been heated, and which have been drawn long distances, are far more expensive than are high grade fertilizers. Stable manure exposed in piles from April to October often loses half its value; therefore, I am led to believe that many tons of manure which are transported from the city contain less than a dollar's worth of soluble plant-food. This may act beneficially as a mulch, but so far as the plant-food it contains is concerned, it is too often an expensive way of preserving the fertility of the land.

Among the peaches, Mountain Rose, Oldmixon Free, Moore's Favorite, Stump, Crawford's Late, Late Rareripe come in from the earliest to the latest. About, or just as good, are Hance's Golden, Crawford's Early, Chair's Choice, Brandywine, Red Rareripe, Globe, Fox's Seedling (one of the hardiest). Among the extra-sized peaches are Reeve's Favorite, Mary's Choice (probably one and the same peach re-named); Susquehanna is one of the largest. The above are all freestones. Enough clings come from California to supply the market for that class. They keep better than freestones.—R. N. Y.

PLUM GROWING AT BERLIN.

THE past season's plum crop in this neighborhood was exceptionally fine, although not quite so abundant as the previous season's; the fruit was better in quality, larger in size, and the darker varieties finer in color, and with but a slight percentage of rotting. Hitherto it was almost impossible to get a good crop of Victorias and Pond's Seedling, on account of their rotting propensities. The past season was an exception; the fruit colored finely, and fancy prices obtained on account of their beauty for canning purposes. The plum rot may be mainly attributed to the curculio, from punctures made usually at the apex of the fruit. This is done after the time of depositing the eggs and after the spraying is finished. From the incisions made, a gum exudes, which in appearance resembles diamonds; these excrescences become pasty during moist weather, and life being ever on the alert to invade matter when in a proper state for inception, takes immediate possession, hence the appearance of the fungus; the cherry may be affected in a similar manner. Hitherto I have used aloes to ward off the plum curculio with good success, but, running short of that drug, had to fall back on Paris green very reluctantly; but was agreably disappointed, having found it equally effective, not only in checking the curculio, but in preventing the fruit from rotting. This may be attributed to both the arsenical and coppery ingredients which are well known in science as preventives of fermentation and decomposition. The use of copper sulphate was known by the farmers and foresters of Britain nearly a century ago, for preventing the smut in wheat and the dry rot in the Scotch pine timber.

Acting from the experience of my neighbors who had almost defoliated their trees by using too much Paris green and without an admixture of lime—which is absolutely necessary in order to neutralize the effects of the poison on the foliage—I found that a teaspoonful of Paris green to a three gallon pailful of water and a handful of slacked lime thrown in was sufficient for the purpose. Lime even used alone is a fungicide and will clear trees of lichens, which are closely related to fungi. It may not be out of place to remark, that since the use of Paris green to kill the potato beetle has been made, a perceptible lessening in the potato rot has been effected. It may be also noticed that since spraying is now generally practised, by either using Paris green or sulphate of copper (blue vitriol), the black-knot which has hitherto been so destructive to plum and cherry trees, has almost disappeared.

The black-knot fungus appears to belong to a genera indigenous to this continent, affecting many of our forest trees, such as black ash, pine, cedar *(Arbor vitæ)*, cherry, etc.; but exotics of both *Cerasus* and *Prunus*, even the hardy sloe *(Prunus spinosa)* suffer the worst, probably due to climate extremes. Internal decay or fungoid decomposition expels the resin or gum through fissures and cracks upon the surface, and on these substances the fungus spores are deposited, and not directly on the bark as some suppose.

Berlin. SIMON ROY.

PRUNING THE GRAPE.

R. JABEZ FISHER, of Fitchburg, the well-known cultivator of fine fruit, gave a discourse at Boston, before the meeting of the Massachusetts Horticultural Society, the substance of which we give in condensed form. He purchased his first vine, a Concord, forty years ago. Ten years afterward he had an enormous crop, four and a-half tons upon three-fourths of an acre, which sold at a high price. Success with grape-growing at present depended on circumstances, and if a person had a vineyard well situated and in good condition, he would advise growing the best possible product.

His experience taught him that the best soil is a strong one, inclining to clay, but not too heavy, with good drainage. Shelter is useful. A field in fit condition for corn is also suitable for grapevines. No training is necessary the first year. As soon as the leaves fall the vines should be cut down, leaving two or three buds only. The second year a single stake to each vine is sufficient. The pruning of the second year is similar to the first. A permanent support should be provided the third year, whether trellis, stakes or otherwise, as preferred. The object is to grow a single strong cane. When the length of six feet is attained this cane should be stopped by pinching off the point. All laterals that grow from this cane should be pinched so close that they may not divert growth from it. If it makes a growth of five to six-sixteenth of an inch in diameter, it will be safe to allow it to fruit for half its length, and it should be cut back to that point at the fall pruning. If less vigorous, the whole should be cut away as in previous years.

Fruiting too soon injures a vine seriously. If the vines are six feet apart they may fruit one cane and grow a new one, cutting out the one that has borne fruit. If twelve feet distant, two arms may be fruited of six feet each and two new canes produced to replace those fruited. This will require a year or two more to reach full bearing. Each vine may be allowed to carry as many clusters of fruit as there are spurs growing from the arm. Each fruiting spur may be tied to the trellis or allowed to swing free as in the Kniffen system. The system above described is the renewal system, the vine being, so to say, renewed each year and thus kept perpetually young. If the land is in good heart, and no other crop is grown upon it, no fertilization will be required before the third year, but otherwise it should be supplied from the commencement.

The Japanese Honeysuckle and our native Bittersweet both have great merits in the adornment of house-walls, and another acquisition from Japan, in the way of a climber, is Clematis paniculata. With its delicate foam-like masses of white flowers, exquisitely aromatic, it has become a feature of the September landscape in various parts of the Boston suburbs. When combined with the Virginia Creeper its effect is strikingly beautiful.—Garden and Forest.

INTENSIVE FARMING.

AST fall I became convinced that I had been trying to farm on too extensive a scale; that I had spent a great deal of time, labor and money in cultivating a large area rather indifferently, and I determined to see what I could do this year in the way of intensive farming. I selected a piece of land about as poor as any on the farm—which, by the way, is saying a good deal—but chose it because it was sheltered by a cedar hedge from the north-west winds, and had a slight slope toward the south-east. On this piece, 250 feet by 70 feet (about four-tenths of an acre) I spread manure from my cow stables—rich from feeding cotton-seed meal, bran and corn meal—covering the land at least three inches deep. I plowed and harrowed it carefully, and September 20, sowed it all to spinach in rows 36 inches apart. This did not grow well enough to sell any in the fall, but all through January and February I sold it at $1.20 per bush., using only the thinnings.

March 8, after giving the bed a very careful harrowing and raking, I sowed 18 rows (250 feet) each, of Eclipse beets, putting two rows between each two rows of spinach. I also sowed two rows, same length, of potato onion sets: and again March 12, ten rows more of Eclipse beets and four rows of onion sets. March 22, I sowed two rows of radishes; March 31, two rows of radishes; April 5, four rows of lettuce and four rows of turnips. May 14, I had cut out all the spinach in the bed, and on the rows thus left vacant, I gave a dressing of 200 pounds of superphosphate, working it well into the soil with my Planet Jr. wheel hoe. In these rows, we set out lettuce transplanted from the four rows mentioned above, and Early Jersey Wakefield cabbage raised in the hothouse—13 rows of lettuce and 10 rows of cabbage. All the onions, beets radishes. carrots and turnips, were sold bunched, cabbage and lettuce, of course, by the head, and the spinach by the bushel. The returns from the "salad patch," as we call it, to date are as follows:

Spinach	$61 65	Beets, bunched	$21 84
Onions, in bunches	28 51	Cabbage	31 76
Lettuce	44 00	Carrots, bunched	13 00
Radishes, in bunches	21 69	Turnips, bunched	5 60
Beet tops, for greens	8 47		
Total			$239 52

I think there are enough beets, carrots, cabbages and turnips still in the ground to bring this amount up to $500, and I am sure, from this experiment that, could I have given this "patch" all the time needed, I could have increased these returns by at least one-half. I am also sure that the returns would have been much greater had I given the bed a dressing of nitrate of soda early in the spring. The cold, wet spring prevented the nitrification of the

manure, and the spinach got no good from it until quite late. Had I used the nitrate, I could have had the spinach sold off sooner, would have got more of it and for it, and could have set out my cabbage and lettuce earlier.

I think I planted too close, or should have left out every fourth row, as I found that many plants were damaged in hoeing, weeding and transplanting. The moral of this, to me, is: Stop spreading yourself and your manure over many acres, work only as much land as you can fertilize, and cultivate in the most thorough manner, and devote your best energies to getting the greatest possible crops from it. Try to raise 500 bushels of potatoes on one acre instead of 1, 10 or 20— its much less work.—R. N. Y.

Care of Apples.—There is no question about the importance of, so far as possible, preventing the bruising of the fruit. From what has been said in strong terms concerning the barrier of a tough skin which nature has placed upon the apples, it goes without saying that this defence should not be ruthlessly broken down. It may be safely assumed that germs of decay are lurking almost everywhere, ready to come in contact with any substances. A bruise or cut in the skin is, therefore, even worse than a rough place caused by a scab fungus on a lodgment provided by the minute spores of various sorts. If the juice exudes, it at once furnishes the choicest of conditions for molds to grow. An apple bruised is a fruit for the decay of which germs are specially invited, and when such a specimen is placed in the midst of other fruit it soon becomes a point of infection for its neighbors on all sides. Seldom is a fully rotten apple found in a bin without several others near it being more or less affected. A rotten apple is not its brother's keeper. The surrounding conditions favor or retard the growth of the decay fungi. If the temperature is near freezing they are comparatively inactive, but when the room is warm and moist the fruit cannot be expected to keep well. Cold storage naturally checks the decay. The ideal apple has no fungous defacements and no bruises. If it could be placed in a dry, cool room free from fungous germs, it ought to keep indefinitely until chemical change ruins it as an article of food.—Germantown Telegraph.

Grapes never ripen any after picking. All that can be expected in the way of change is the evaporation of some of the water and finally decay. They must be in perfect condition for eating when plucked, or the full value of the fruits will be missed. They should be plucked as soon as ripe, however, and be stored away in some cold place. They can be preserved even longer than pears. Raspberries, strawberries and blackberries gain very little after picking. They should be allowed to reach their full growth before picking, but they are worthless for keeping if allowed to reach the stage commonly known as "dead ripe." They are then unfit for shipping. Practically the destructive forces have already started into operation at that point, and nothing will check them after such a start.—Rural World.

EVAPORATED APPLES.

HE crop reports state that the apple crop in the United States is only about half the usual yield. In localities where the crop is good, apple buyers are numerous, and are offering good figures for sound winter fruit. The question will arise in many a farmer's mind how to dispose of his apples so that they will bring the largest returns. This question may be answered in different ways. If the farmer is situated near a good market, and has good storage for his winter's fruit, it may pay him best to pick it carefully and hold it until he thinks the market will go no higher, and then dispose of the fruit himself. But when the orchard is of considerable size, the most profitable way to handle the apple crop is to dry it.

Take the present prices offered in New York for evaporated fruit, ten and one-half cents per pound. At six pounds of dried fruit to the bushel of apples, this would represent sixty-five cents per bushel, and this for any apples large enough to dry. Many varieties of apples will overrun the six pounds. Russets, it is claimed, will make nine pounds of dried fruit to the bushel. This would represent the sum of ninety cents a bushel for every bushel evaporated of this variety.

Small apples, under two inches in diameter, are made into what is called "chops," or jelly stock; even the core and peelings have a commercial value, either dried or made into vinegar.

When apples are sold to the general buyer, the culls and small fruit are thrown out and frequently left to rot on the ground. In an orchard of any size this item alone, if saved, would pay for an evaporator in one year.

It costs as much money to hand-pick one bushel of winter fruit as it does to evaporate the same amount.

A sudden wind squall in our locality blew off thousands of bushels of the prematurely-ripened fruit. What will become of all these apples on the ground? Ninety-nine bushels out of every hundred will rot; the one-hundredth will belong to a man who has an evaporator, and he will realize fifty cents a bushel from these windfalls, after paying all expenses of drying. As fifty cents per bushel is about as high a price as is ever offered for picked winter fruit, this ought to be a good argument in favor of having an evaporator.

Do not infer that the price of evaporated apples always remains at ten or ten and one-half cents; rather the contrary. But when dried apples are worth five cents per pound, choice winter apples will be abundant at twenty five cents per bushel.

The evaporator offers every man who has a twenty five acre orchard a market for his fruit. When evaporated, it can be kept unchanged for years if the proper precautions are used.

And yet, judging from the experience of those who have gone into the

business and had to buy their apples, it is not, taking one year with another, a very profitable investment, for I know personally of four firms that have, after a few years' evaporating, lost their whole capital.

There is an erroneous idea that running an evaporator requires a good deal of skill. This is not so. Any farmer who has two or three girls can dry his crop without any other help.

The whole secret of evaporating fruit can be summed up in a few words: A continuous current of rapidly-moving hot air carried through the fruit. This is the whole secret, no matter what form of dryer you use. And any form of dryer that will not allow of the air being kept in motion is not, properly speaking, an evaporator.—New York Examiner.

UTILIZING A CELLAR'S WARMTH.

The illustration shows a convenient way of starting plants in the early spring, upon the sunny side of one's house. A frame is built against the underpinning of the house and over one of the cellar windows, which is hinged so as to be raised and hooked to the floor timbers of the house. The warm air of the cellar, being allowed to enter the enclosed frame outside, tempers any sud-

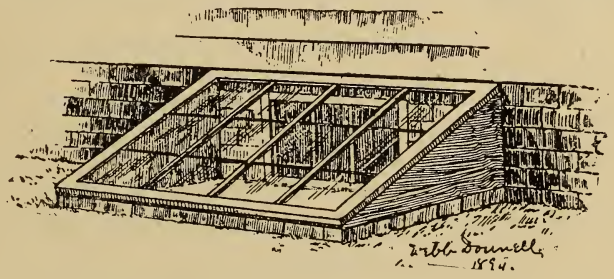


FIG. 716.

den chill in the atmosphere, either at night on on cloudy days, particularly where the cellar contains a furnace, or other heating apparatus. Of course, such an arrangement does not in any way take the place of a hot bed, but will serve the purposes of a large class of persons whose early plants are usually started in boxes in the kitchen window.—American Garden.

Thinning Plantations.—It is a good time, too, for a walk of inspection through young plantations to mark the trees which have been overshadowed and stunted by their stronger neighbors or crowded out of shape. Such trees should be removed to give the other ones free chance of expansion, for whenever trees begin to interfere and struggle with each other for the mastery, it is best to stop the battle at once.--Garden and Forest.

The Garden and Lawn.

ORCHIDS FOR AMATEURS.

THE most popular flowers of the day, perhaps, are the orchids. Many varieties are sold at fabulous prices, and persons are sent into all parts of the world where they grow to collect new varieties. Amateurs are beginning to attempt the culture of some kinds, and I am very glad of this, because there are several fine varieties which can be grown in the ordinary greenhouse, and the study of this peculiar class of plants is sure to be greatly enjoyed. It is difficult to say which is most interesting to the enthusiastic florist, their beauty or their peculiarities. It has been demonstrated satisfactorily of late that some of the best sorts can be grown among ordinary collections of plants. Even some kinds which were formerly considered hothouse varieties, can be brought to perfection in a house adapted to carnations, and other plants of similar character. Experience has shown that *Dendrobium nobile*, *Wardianum* and *Densiflorum*, and a large number of cypripediums, cattelyas, lycastes, oncidiums and epidendrums may be grown in the ordinary greenhouse along with a miscellaneous collection of plants. This being the case, I would urge amateurs possessing such houses to invest a few dollars in good plants, and experiment with them.

There are two classes of orchids: those which grow in earth, called terrestrial orchids, and those which grow on trees, rocks and similar places, epiphytal orchids. Most kinds require a long season of rest, especially the class last named. In their native habitat, flowering and growing periods are succeeded by periods of complete rest, and we must imitate Nature's management of them if we would be successful with them. All orchids which form what is called pseudo-bulbs, must be thoroughly matured before success can be attained in their culture. Evergreen sorts, which do not form these bulbs, require to be kept moist at all times, but a larger quantity of water is required at times when they are making growth than after that growth is completed.

The chief essentials in orchid culture are fresh soil for such kinds as require earth to grow in, clean pots, freedom from insects, and a steady temperature. Dendrobiums do about equally well in pots, baskets, or on blocks of

cork or bark, with a little moss wired about their roots to retain moisture. The erect growers are best adapted to pot culture, while those of pendulous habit are displayed to the best effect if grown in baskets filled with peat and sphagnum moss, which should also be used in pots. The best drainage should be given. All the dendrobiums require a good deal of water while making growth. Cypripediums are of comparatively easy culture, and seldom fail to produce flowers. Plant them in peat and moss in about equal quantities, give their roots considerable room, and see that drainage is perfect. Do not let them get dry at any time, and be careful to see that water does not get into the axil of the leaf, as it induces rot. Do not try many kinds at first. Procure your plants of well-known dealers in this class of flowers, and ask for instructions for their culture to be sent with them. If you succeed with a few of the commoner and less exacting kinds, you can very safely try your hand at the culture of other sorts. —EBEN E. REXFORD, in Am. Agriculturist.

AMONG THE FLOWERS.

The garden gate swung to and fro,
Then came a whisper soft and low,
And said the lily to the rose:
"That is her lover, I suppose."
Says rose: "He comes here every day,
I wonder what they have to say?"
"They don't see us," the jasmine sighs,
"Each looks into the other's eyes!"

"He loves her so," the rose replied,
"Oh!—here they come," the violet cried.
"He holds her hand," the pansy said,
"And, like the rose, she blushes red."
And rose remarked: "It is not right
For us to listen—nor polite—
To all their vows—and tender sighs—
Oh! dear—he kissed her—shut your eyes!"

—Godey's Magazine.

AN INEXPENSIVE GREENHOUSE.

THE illustration (Figure 717) shows the plan for a greenhouse which is cheap and gives a different temperature in the various parts of the house, yet is heated with only one fire. It really consists of two small greenhouses joined together as shown. The front part is ten feet wide and twenty-two feet long. I have used this greenhouse for two winters and it works admirably. I grow palms and hothouse plants in one section, and primroses, cinerarias and cool greenhouse plants in the other, and all thrive satisfactorily. To build the house I dug in the ground two and a half feet, then set in oak posts eight feet long, sinking them three feet in the ground. This left the walls five feet high, except the south wall, which is only four feet high. This wall being low lets in plenty of sunshine. The framework is oak scantling two by three inches, and the walls are made of oak boards one inch thick. Then earth is banked up to the top of the wall and sodded. The rafters on the south side are seven feet long; all the other rafters are four and one-half feet long.

The letter *a* indicates the position of the stove, which is an old-fashioned wood heating stove, for which I paid $1.50. The legs are left off and it is set on bricks so as to place it low down, and over it is built the cutting bench, the bottom of the bench being two feet from the top of the stove. A large pot of water is kept on the stove to maintain due moisture in the air. A large piece of sheet-iron is placed between the stove and the wall; another piece is arranged so as to be easily moved in and out between the top of the stove and the bottom of the cutting bench. The dotted lines show where the flue passes from the stove. The flue is made of six inch tile, except one joint of stovepipe next the stove. This tile is supported by strong galvanized wire fastened to the wall at one end, and to the rail on the flower bench at the other end. The joints of tile are luted together with wet clay, which makes it easy to take them down for cleaning out the soot, which must be done about once a month in winter. The bench indicated by *b* and *c* is built high enough to allow two and one-half feet space under it, which gives room to get under to put wood in the stove; *b* is a bed of heliotrope, which is always in bloom, and *c* is where the carnations are grown for winter blooming.

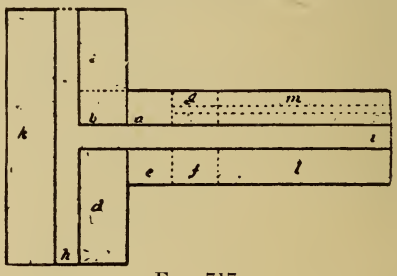


FIG. 717.

The fire is allowed to burn its full force only in zero weather, when it must be looked after every four hours. In moderately cold weather it may be left all

night. There is always a difference of ten to twelve degrees between the middle and the ends of the greenhouse. At *d* is the rose bench, where roses are grown for cut flowers, a Marechal Niel being in the end nearest the fire. The bench is two feet height; *e* is the place for begonias and young palms; *f*, smilax, the bench low down; *g*, coleus, begonias, etc.; *h*, a large palm; *i*, a tall plant. All the benches, *k*, *l* and *m*, are used for plants for sale. The walks are two feet wide; the door is in the west end, and a storm door is built outside. I did all the work myself, and the greenhouse cost me $50. With a few cold frames in addition it will, if well managed, turn out $200 to $300 worth of plants and cut flowers per year.

Still, if the purse will admit, I advise to build it on the level ground and not dig. Use two thicknesses of board and put tarred paper between them, as the building will last much longer, will not be so damp in continued wet weather, and will then allow cold frames to be placed outside the east wall. My house has a good drain, which is indispensable for a house built below the level of the ground.—F. H. FELTER, Ohio, in American Agriculturist.

Heeling in Trees for Spring Planting.—If the trees are properly heeled in a sheltered place to prevent evaporation, a sufficient number of roots will form to keep the branches plump during the winter; the scars, where bruised roots have been cut away, will have become calloused over, and they will suffer no shock when removed to their abiding place in spring, but will continue to grow as if they never had been disturbed. If trees are to be brought from a distance it is, therefore, better to procure them in the autumn than to wait until spring, and everything will be at hand for prompt action at a time when work of many kinds is pressing. If it is too late to secure the trees in time to heel them in while the ground is still warm and open, they should be procured at once and wintered in a cellar or pit. If they are heeled in they should be placed in a rather shallow trench and in an inclined position, and far enough apart to allow fine soil to penetrate every portion of the space occupied by the roots without leaving any unfilled interstices. The ground, of course, should be dry and well drained; no stones, clods or sods should be used in the filling, nothing but finely pulverized soil. A portion of the stems, as well as the roots, shou'd be buried and the surface rounded, and it is better to dig a trench around the whole area occupied by the tree-roots, because mice will not be liable to push up under the snow against an inclined bank of earth.—Garden and Forest.

Prof. Budd says, as the united result of many trials, made under the direction of the Russian Government, it has been decided that the best time to cut trees was near the end of June while the bark would peel freely.

A CHEAP GREENHOUSE AND COLD FRAME.

HEREWITH submit the plan of a cheap greenhouse, with cold frame attachment, which can be built of all new material and fitted up ready for operation for about $21.50, and if anybody has lumber lying idle they can build it at a still less figure. I have operated one for my own private use the past winter, and it was a decided success; only twice throughout that season did I use three wicks, this was in cold snaps when the outside temperature marked from 10 to 16 degrees below zero, and I then found no difficulty in maintaining an average night temperature of 52 degrees. At no other time did I burn more than two wicks and often only one. I kept a small basin of water on one side of the stove, giving it just heat enough to evaporate a moist air, and filling it about twice a day; the fumes from the stove were hardly noticeable after being lighted an hour.

In this house I grew a general variety of plants and bulbs, the latter doing exceptionally well. The cost of heating was one-half gallon oil per day in severe weather. Many of your readers no doubt, like myself, are feeling the business depression of the past year, and this is a handy practical house and set of frames at hard time prices. In my estimate the cost of shutters to cover the cold frames is not included. The cold frames can be connected with the house by one siding board in the frame, put on hinges, and opened on severe cold nights to prevent damage from frost.

In constructing the house I would say that the siding is nailed to the joist and the whole inside is lined with builders' paper fastened in place with strips, and the whole covered with whitewash. Anyone, at a little extra expense, can make a double siding with an air space, which aids greatly in keeping out the frost.

Plans for a cheap greenhouse and potting shed 17 feet long and 7 feet high, with cold frame attachment: greenhouse and frame proper, 12 feet long; house 7 feet wide and cold frame 6 feet wide, built at a cost of $21.33 for first-class material, and at a much less price if you have waste lumber and other material lying idle.

PRICE AND QUANTITIES OF MATERIAL NEEDED.

6 joists, 3 x 4 in., at 18 cts. each	$ 1 08
6 fence rails, at 16 cts. each	96
20 Novelty sidings, at 25 cts. each	5 00
4 boxes glass, 10 x 12 in., at $2.50 each	10 00
12 batten strips, at 5 cts. each	60
9 plain boards for shelves, etc., at 16 cts. each	1 44
Paper for lining	24
Putty	20
Nails	20
Oil stove, ¾ in. wick and pan	1 60
Total	$21 33

Asked for further particulars, Mr. Townsend says:

In answer to your questions I will say that, first of all, my object was to see how cheap a house (adapted to the use of an amateur) could be built and fitted ready for use. There are so many people who keep plants in their houses without satisfaction, owing to the high temperature and dust of the living rooms, who say to themselves, "Oh! if I only had a conservatory or a greenhouse." Then they sit down to figure out the cost of such a structure, and sighing within themselves at their inability to build, relegate it all to the sweet by-and-bye. Thus, I fitted up this house at the least possible expense, and grew all kinds of plants in it to perfection.

The roof of my house is all glass, laid in 1¼ inch strips fastened to cross rails (fence rails), supported by joists. A row of glass is also laid in strips under the eaves, 10 inches deep, end touching end; then comes a wide board, and below that comes the cold frame. The back is solid boards, also the west end, while the east end is ¾ inch boards.

The stove is set in the middle of the greenhouse proper, in a hole dug in the ground, boarded up, and lined with old pieces of tin. Over the stove is a thin piece of sheet iron which acts as a radiator. I use no pipes.

An amateur can never fail with my method, as, simple as it is, the health of the plants prove it as successful and advantageous as the larger house heated with hot water.

The potting shed is separate from the greenhouse, and acts a double purpose, being useful for storing potting soil and general work, also, breaking the force of the cold entrance. The house is built perfectly tight with a tin roof. A light gutter, made V shaped out of batten strips, and painted water tight, carries the drip to the end whence it runs down a small pipe to the water barrel set in the ground under the bench; thus you always have water for wetting and syringing when necessary, and it is always at the temperature of the house. I would also state that the bench over the stove is protected with a tin shield or screen, the first shelf being 2½ feet above the stove; when the heat reaches the tin, it expands out into the house. In fumigating, all that is necessary is to put some tobacco on the stove and it soon does the work.

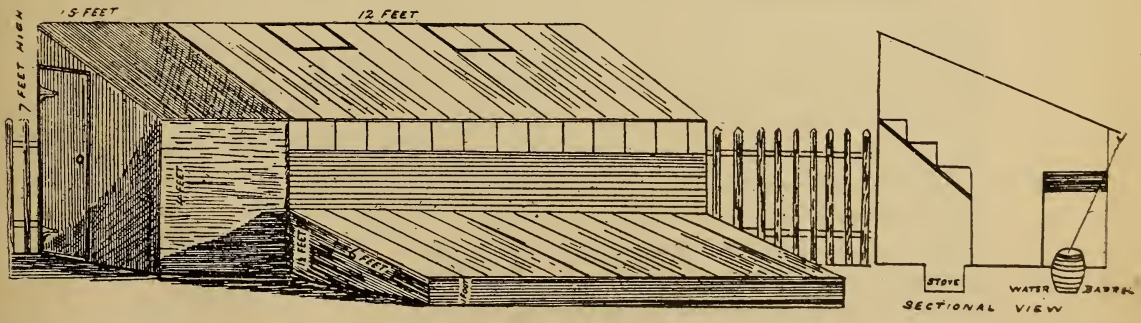


FIG. 718.—A CHEAP GREENHOUSE AND COLD FRAME.

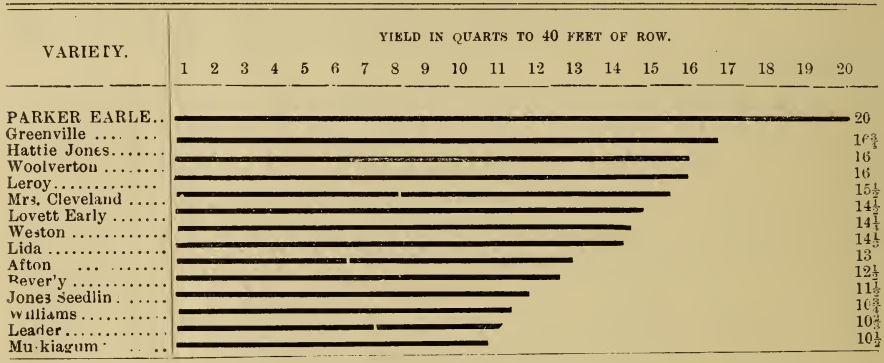
To me my house is a decided success and worthy of a trial. So satisfactory has been its workings that several are to be built by neighbors this season on like principles. Flower lovers from all over our town have taken special pains to carefully inspect it.

All lovers of flowers, and gardeners who want a place to start early seeds and plants, will find a house of the dimensions here given of great value, besides enjoying the pleasure of the house and its management. I have sold enough plants this spring to build two just like it, and the coming summer I expect to largely increase present facilities.—Gardening.

RELATIVE YIELD OF 15 SELECTED SORTS STRAWBERRIES,

As determined at the Michigan Experiment Station, 1894.

In the folowing diagram we have endeavored to show at a glance the relative productiveness of the varieties in the above table, selecting only those with a yield in excess of ten quarts from the forty feet of row.



Careless Planting.—Many a man who realizes the necessity of a skilled gardener to plant his flower-border, feels that any laborer who can handle a spade is competent to plant a tree. He keeps a gardener busy all the season among his flower-beds, but never dreams that a tree demands a moment's attention after it is once set in the ground. Even farmers, who know the value of care and cultivation for their crops in field and garden, will plant an orchard, leave it for years without any care, and then wonder why their unhealthy trees yield no crops of fruit. The fact is, that one tree well planted, either for ornament or use, is better than a dozen carelessly placed in the ground. The time and money spent in tree planting is worse than wasted unless the work is done in the best manner from the very beginning, and unless the care which follows is intelligent, determined and unceasing.—Garden and Forest.

VINES ON DWELLINGS.

HEN selecting vines to plant alongside of a house or fence, it must be remembered that there are two distinct classes of them. One class contains those that need a trellis or something to support them as they twine; the other, those clinging to whatever they touch, just as the well-known English ivy does. The latter kind is usually called self-climbers, because of requiring no assistance to climb. Therefore, for planting alongside of houses or close fences, these self-climbers must be selected. Fortunately, the variety in this class is a large one, and some of the best of them will be mentioned. The Virginia creeper is worthy of early mention. It is one of the best known of all vines, to a great extent because of its beautiful foliage in autumn time. It is not, however, just the vine for a dwelling house, because of its twiggy growth. It becomes too bushy for neatness. It seems much more in place about carriage houses or similar buildings. The twiggy growth spoken of affords room for English sparrows to build their nests. To some this would be a recommendation, but to the majority of persons it would be the opposite. In another member of this family, which comes from Japan, the Ampelopsis Veitchii, and called Japan ivy, there is a vine unequalled for the purpose. If quick growth, shining green,beautiful foliage, brilliant colored leaves in the fall count, it is far ahead of all other vines, when there is to be considered the tenacity with which it clings to a wall, be it ever so smooth. It is simply impossible to tear it away. Having mentioned about the Virginia creeper harboring sparrows, it must be said of this one that it is impossible for a bird to build in it. There is nothing but the stems against the wall and the projecting leaves therefrom. The well-known Trumpet vine is another good clinging one. Give it a coarse wall or a decaying tree to ascend and it is in its element, and what a gorgeous display its large, brilliant, trumpet-shaped flowers are in July and August. There are three colors, red, crimson, and orange. The European ivy exist in several varieties. The English is the most common, but there is a small leaved sort from Russia which may be hardier. About Philadelphia there are many houses which have their northern or eastern sides well covered with ivy. On the sunny side it gets destroyed in severe winters. It is evergreen, of course. There is a Euonymus which is evergreen, and which climbs as ivy does. Its foliage is very small and the vine grows slowly. It seems hardly suited for house planting, but for covering small buildings or for trees it is of value. There are three other vines, all of them new or rare, which may come to be much used. Schizophragma is one, and Hydrangea Scandens is the other. Both have been called climbing hydrangea, though to the latter the name properly belongs. This climbing hydrangea, bears heads of flowers as the well-known shrubs of this name do, though not equal in beauty to the best of them. But it is a grand vine where a

strong, robust one is wanted. It forms thick, "chunky" shoots, which cling very tightly to what they touch. It bears large, green leaves, mostly on small branchlets which stand out from the wall. It makes an excellent shelter for birds in summer while the foliage is on. It is not very well known yet, but when it is it will be much used. The last to be named is a native of our own country, growing wild in the Southern States. It is the Decumaria Barbara, by same called the American climbing hydrangea, because of its near botanical relationship to it. It is of much finer growth than the preceding one. The leaves are small, thick and fleshy. When it gets fairly started its growth is rapid and it soon gets to the top of a wall. It is a very neat climber. It bears white, sweet-scented flowers in flat heads. These are some of the most common of the self-climbing vines; and, as will be seen, there are some suitable for all purposes. —Practical Farmer.

Another Climbing Plant from Japan coming into marked favor is Euonymus radicans. While the English ivy flourishes in places in and about Boston, occasionally growing well over a house-wall or a ledge, it is not thoroughly hardy. Even in Newport, where it seems to be well at home, it is badly winter-killed at times. E. radicans, being evergreen and perfectly hardy, makes a good substitute for the English ivy in certain respects, but, like its compatriot, the Ampelopsis tricuspidata, it does not take kindly to every soil. It is also slow in getting a good start, and does not clamber so high as the English ivy, but once well started it grows rapidly in good soil. It is growing luxuriantly over a corner turret of the fine Public Library in Malden, and another conspicuous example of the beautiful effect it can produce is seen in Brookline, where it has mantled a high rustic fence with an arch over a driveway. Altogether, E. radicans has qualities that commend it for extensive use in places where a climbing evergreen is desired. Its general introduction would do much to give interest to the winter aspect of parks and house-grounds.—Garden and Forest.

New Ornamentals.—Josiah Hoopes, of West Chester, Pa., mentions the following among the most satisfactory of the newer shrubs, although not strictly novelties: Exochorda grandiflora, Viburnum plicatum, Weigela candida, Spiræa callosa, Spiræa crispifolia, Rhodotypus kemoides, and the dwarf Japan maples. The Exochorda, from the north of China, produces large white flowers in May, but is difficult to propagate; Viburnum plicatum is one of the finest of the genus; Weigela candida is a fine, erect grower, becoming a large shrub, and it produces a profusion of white flowers early in summer; Spiræa crispifolia is a very small, short shrub, about a foot high, with pink flowers, and blooming through summer; Rhodotypus has single white flowers late in spring, and handsome foliage.

TREES IN WINTER.

HAVE often thought that this subject ought to receive from planters more attention than it does at present. The individuality of different ornamental trees is much more apparent in winter than in summer. When clothed with foliage we lose all the character and variety noticeable in the arrangement of their branches and twigs, which is very distinct in different species. One of the most obvious features in connection with the wintery aspect of trees is their tone of color. The common elm, for example, stands out nearly black when seen against a clear grey sky or when snow is lying on the ground, and the same may be said of the common hawthorne. Oaks are a little more cheerful in tone, and poplars still more so, as their growth is more pliant. A poplar when swayed to and fro on a bright winter's day is one of the most beautiful of all trees, because then the different shades of soft silvery grey and brown are reflected from the branches in a very pleasing manner. Poplars are always in motion, too, whenever there is the slightest breeze, and this gives variety and interest to the groups of other trees in which they are planted. They are very attractive when budding out in the spring, which some of them do very early, and their green shades being very delicate, harmonize thoroughly with the soft browns of the stems and branches.

One of the lightest and brightest of all trees in the winter, however, is undoubtedly the common birch, which should always find a place on the lawn, and especially in the vicinity of ornamental water. Seen on a bright sunny day in December, the Silvery birch is one of the most beautiful of all ornamental trees, and when covered with white hoar-frost, it is difficult to imagine a more attractive object. The Wych elm and larch are also beautiful under the circumstances just named. The larch, when planted as an isolated specimen on the lawn, is most effective, and very different from the same tree when drawn up in a mixed plantation. As a solitary specimen it varies in height from 50 feet to 100 feet, and its light, drooping branches feather down to the turf in the most graceful manner. No ornamental tree is more beautiful in the early spring months, when its young foliage shows the freshest and most delicate shades of green imaginable. The common ash is a bright-looking tree in winter, the bark being of a silvery grey or light brown tint. This tree ought to be more generally planted in the suburbs than it is, for as a town tree it is immeasurably superior to either the elm, lime or chestnut, all of which suffer from drought and red spider during hot summers, and lose their leaves or become rusty towards the end of July. The ash is rather late in leafing, but, like the planes, its foliage keeps fresh and green until the sharp frosts of autumn cause it to fall, and on this account it deserves a place in town squares and gardens.—The Garden.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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Notes and Comments.

THE YIELD OF A 5-YEAR OLD BEN DAVIS APPLE TREE.—Mr. J. G. Mitchell, of Clarksburg, writes us giving the exact amount of fruit harvested this year from a Ben Davis apple tree planted in the spring of 1889, and receiving garden cultivation. The quantity was one barrel No. 1 apples, twelve pounds No. 2, and nine pounds of culls. He stated that nine trees of the same variety, planted the same day, but receiving only ordinary orchard cultivation, yielded together only an aggregate of one barrel of No. 1 apples. This statement shows what care, cultivation, manure, water and spraying will do for the apple grower.

THE PARAGON CHESTNUT is very productive, according to a writer in the Rural New Yorker. The original tree, now fifteen years old, bears an average of 1½ bushels of nuts, and Mr. Engle, who owns it, thinks they would average 75 bushels per acre. To change an old chestnut grove to this variety he would cut down in winter, and when the sprouts grew from the stumps he would splice graft them to Paragon. This work he does in April.

SAWDUST MANURE is commended by another writer in the same journal. He has used it for two years on some land, and the result was, "better crops, earlier, less injury from drouth, and land as mellow as an ash heap." We have long used sawdust bedding at Maplehurst, for want of straw, and not from choice. Sawdust will remain in the ground a long time without rotting, and therefore does not become available as soon as straw. Still its mechanical effect would be excellent, and the ammonia absorbed would, no doubt, become immediately available.

THE DIRECTOR of the Experimental Farms of Canada never forgets that he was once an officer of our Association, and never loses an opportunity to render us a kind turn. He writes that he can spare us for distribution in spring of 1895, a limited number of the following plants :—Sarah Raspberry, Douglas Spruce, Pinus Ponderosa, Rosa Rubifolia, Cotoneaster Vulgaris.

The last one he believes would make a most interesting shrub. It grows from three to four feet high ; and although the flower is comparatively insignificant, the foliage is very pretty, and the bush is covered with red berries in the autumn and winter. Owing to the number of these various plants being limited our members will need to leave the selection to us.

Question Drawer.

The Western Juneberry.

684. SIR,—Is there any other class of Juneberry that would be better here, in the County of Brant, than the Western Saskatoon ? ED. MAUS, *Echo Place, Ont.*

Reply by John Craig, Ottawa.

A number of varieties, or variations, of the Western Juneberry have arisen by selection in the hands of nurserymen during the past few years. We have not yet fruited any of these special forms at the Ottawa Farm, but I am led to believe that some of them, such as "Success" and "Osage," are marked improvements on the original type. Besides being more decidedly dwarfed, they bear much larger fruit. The first named variety, I believe, was introduced by Lovett & Co., and is now in the hands of nurserymen generally. The second was introduced some years ago by Gardener & Son, of Osage, Iowa, U.S. It may be well to say, however, in connection with growing this fruit, that it is useless to set out a small number of plants, as they, like cherries, are specially prized by birds, and if only a few plants are set out it is quite unlikely that the owner will be able to gather much fruit from them.

To Drive Away Rabbits From Fruit Trees.

685. SIR,—Would you kindly inform me of a wash to prevent rabbits from attacking young apple trees ? S. J. RUTHERFORD, *Gaspereau, N.S.*

Rabbits are sometimes very destructive in the winter time to young apple trees, and there are many simple remedies. Sprinkling blood about the trees is one of these ; another is to dip rags in melted sulphur and then secure them to sticks and stick them promiscuously through the orchard. Another, which is used in California, is commercial aloes, one pound to four gallons of water, both sprinkled upon the leaves and painted upon the bark.

Fruit Growing in the North-West.

686. SIR,—Can any of your correspondents tell me what fruits may be grown at South Edmonton, Alberta? Would the Russian apples succeed there?

CHARLOTTE E. GWYN, *Maplehurst, Dundas.*

Reply by Mr. John Craig, Ottawa.

Replying to the questions of Charlotte E. Gwyn, touching the possibility of growing fruit in South Edmonton, Alberta, I may say that thus far our experience has not led us to expect that our present class of large fruits can be grown with any degree of success in any portion of the North-West Territories. Russian apples and Siberian crabs are, undoubtedly, the hardiest members of the edible fruited class of the Pyrus family, but these have failed to endure the winters in almost every case. A specimen apple was received, however, last year, which proved to be "Whitney's No. 20 crab," and grown at Prince Albert. It is possible that they could be grown to a limited extent by training them in dwarf or bush form, and so arranging the roots as to allow of the trees being laid down and protected in the autumn in the same manner that peach trees are now being grown at the Central Farm at Ottawa. This division of the Farm has been sending out during the past two years seeds of the hardiest crabs and Russian apples to interested settlers in this line of work in Manitoba and the North-West Provinces. It is hoped that by planting these seeds and securing the trees on their own roots undisturbed, that a variety may be secured sufficiently hardy to live and bear fruit in that climate. Having once obtained a start, other seedlings would, no doubt, be produced with much greater rapidity and certainty of success. Among the fruits which have succeeded at Indian Head are the native Buffalo berry (*Shepherdia Argentea*), the Dwarf Sand cherry (*Prunus Pumila*) of the Western Plains, the American gooseberries, currants, raspberries and the native Saskatoon or Juneberry (*Amelanchier*).

The Prince Englebert Plum.

687. SIR,—Please tell me if Prince Englebert is a desirable plum; what are its faults, and is the tree healthy and productive?

ED. MAUS, *Echo Place.*

Reply by Mr. S. D. Willard, Geneva, N. Y.

We have fruited the Prince Englebert plum for years and regard it as one of the finest in point of quality that is grown in the orchard. The tree is perfectly hardy and an excellent producer, and everything to commend it. Why there is not more demand for it I do not know. Its season of ripening, however, may be a little against it, as it cannot be called a real early or late plum, but I believe it is a variety that should be more generally found in all orchards.

Open Letters.

The Reynard Apple.

Sir, —The specimen of the Reynard apple which you have grown at Maplehurst reached me safely. I have cut the apple to test it, and to my thinking it is much improved and also more mature than it is with us at this same date (October 9th). Although I grow a few on scions, I am not very familiar with the Reynard as grown in our best fruit counties where I have long since sent scions. It is such an imposing apple in size and shape, etc., that we are a little proud of it as a seedling of the County of Yarmouth, since our conditions are not favorable for growing fruit. The Reynard originated with Mr. Richard Reynard, of Tusket, who found the seedling growing by the road in an unsettled part of the country. Mr. Reynard removed the wildling to his own place, and was rewarded in due time with apples that averaged larger than any other kind grown in our county. In quality the fruit here is only second-rate, but it is a fair keeper, lasting until mid-winter, and its showy appearance makes it of market value.

Charles E. Brown, *Yarmouth, N. S.*

The Early Michigan Peach.

Sir,—In your October number, page 346, you say that in Canada you need a good peach to come between the Hales and Early Crawford. In this section we have just the peach for that purpose, the Early Michigan. It has a red cheek, white flesh, and is a free stone. Its quality is unsurpassed, and is just the peach to fill the gap you mention. It is as hardy as the hardiest and an early bearer. If you wish it I could send you a few trees next spring for trial. The peach originated in this county. In an orchard of one thousand trees I have set nine hundred of this variety. It sells readily and brings in the returns early. Two years ago I sold my crop under contract for $1.50 per bushel, and from my four acres my returns amounted to $900. The Yellow St. John is a few days later than this peach, and is not so good a bearer.

S. S. Bailey, *East Paris, Mich.*

Apples in the Cochrane Cases.

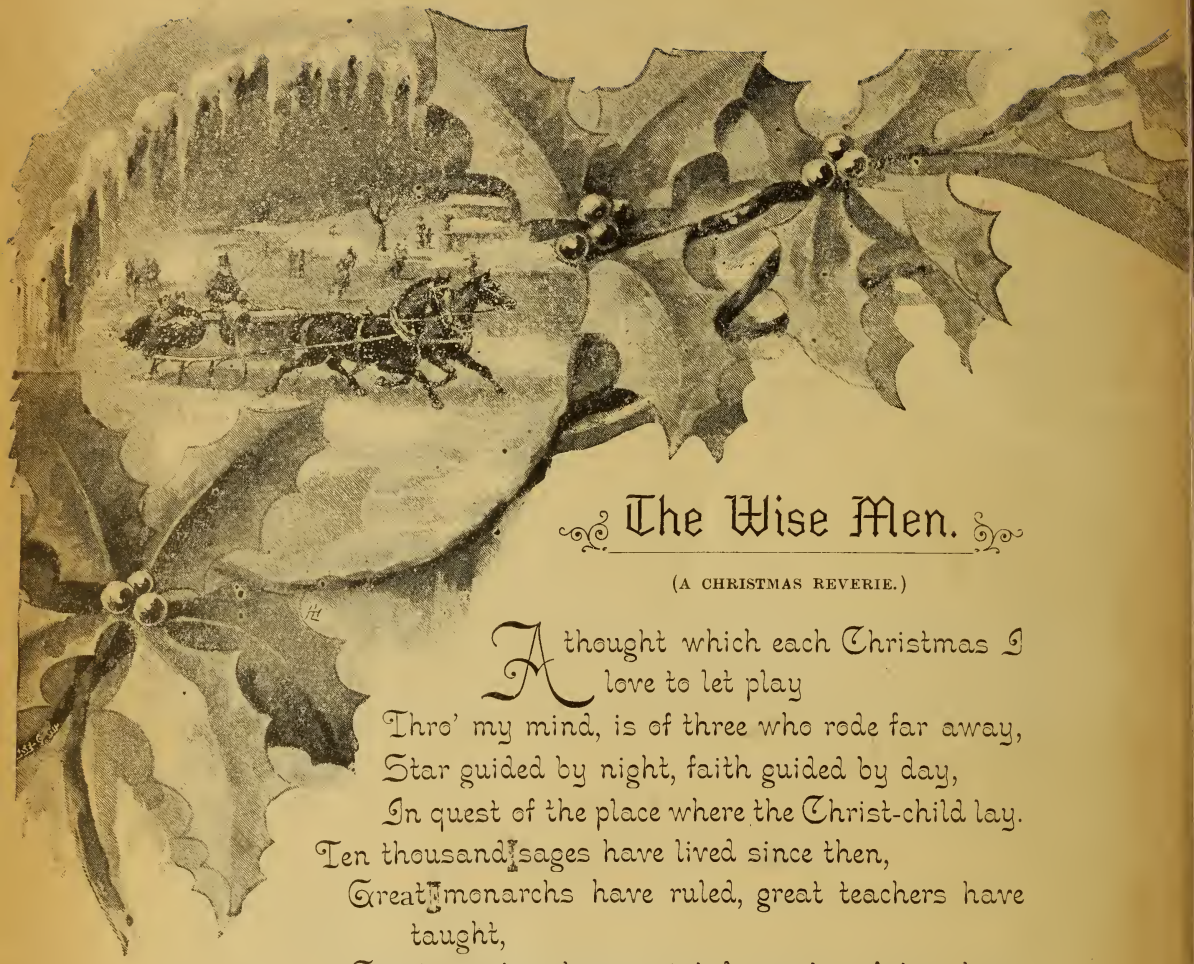
Sir,—I have shipped about fifty cases of St. Lawrence apples to Scotland, but they did not sell so well as the Duchess, bringing in Edinburgh 10/ per case, and 9/ 10d. in Liverpool. At these prices, which are gross prices, it does not pay to ship St. Lawrence in cases; and to show the injustice or at least the great discouragement to the shipper, my St. Lawrence, which retailed at 10/, were disposed of on Princess St., Edinburgh, at 8d. per pound. At this rate the retailer should make a profit of 22/ or $5.50 per case. There seems to be something wrong in this, for the fact that the retailer could ask 8d. per pound would prove that the apples reached Edinburgh in prime condition. Nova Scotia fruit growers have also shipped some of their Gravensteins in my cases, and at a good profit. I shipped the cases in shooks from here to Wolfville.

R. J. Shepherd, Jr., *Montreal, Que.*

Cold Grapery.

I have been very successful with the grapes in cold grapery, some of the bunches going over two lbs. and well shouldered. I had about twenty lbs. and they lasted about ten weeks in good order, the last not being cut until sharp frost, and a few are (Nov. 12th) still on hand. Is there any market for them as a table grape? The outside grapes here did not amount to much, there seems to have been such a glut of grapes. Another year there is a prospect of a good quantity, as the vines have grown well.

A. J. Collins, *Listowel.*



The Wise Men.

(A CHRISTMAS REVERIE.)

A thought which each Christmas I love to let play
Thro' my mind, is of three who rode far away,
Star guided by night, faith guided by day,
In quest of the place where the Christ-child lay.
Ten thousand sages have lived since then,
Great monarchs have ruled, great teachers have taught,
Great painters have painted, great sculptors have wrought,
Great poets have chanted divine truths to men;
Yet the three whom the world calls "the wise men" are they
Who journeyed afar by a devious way,
Star-guided by night, faith-guided by day,
Till they knelt in the place where the Christ-child lay.

VERNON P. SQUIRES.

In the Brunonian.